حمل الان

مجانا وحصريا

المراجعة رقم (1)







Choose the correct answer from a, b, c or d

(1) If L and M are the two roots of the equation : $x^2 - 7x + 3 = 0$, then $L^2 + M^2 = \dots$			
ⓐ 7	ⓑ 3	ⓒ 43	ⓓ 79

(2) If sin θ = -1 and cos θ = zero ,then θ = ………….			
ⓐ $\frac{\pi}{2}$	ⓑ π	ⓒ $\frac{3\pi}{2}$	ⓓ 2π

(3) The quadratic equation whose roots are 2 – 3 i , 2 + 3 i is ……….	
ⓐ $x^2 + 4x + 13 = 0$	ⓑ $x^2 - 4x + 13 = 0$
ⓒ $x^2 - 4x - 13 = 0$	ⓓ $x^2 - 4x - 13 = 0$

(4) If one of the two roots of the equation : $x^2 - (m + 2)x + 3 = 0$ is the additive of the other root , then m = ………..			
ⓐ 3	ⓑ 2	ⓒ -2	ⓓ -3

(5) The equation: $x^2 (x - 1)(x + 1) = 0$ is a ……… degree equation.			
ⓐ first	ⓑ second	ⓒ third	ⓓ fourth

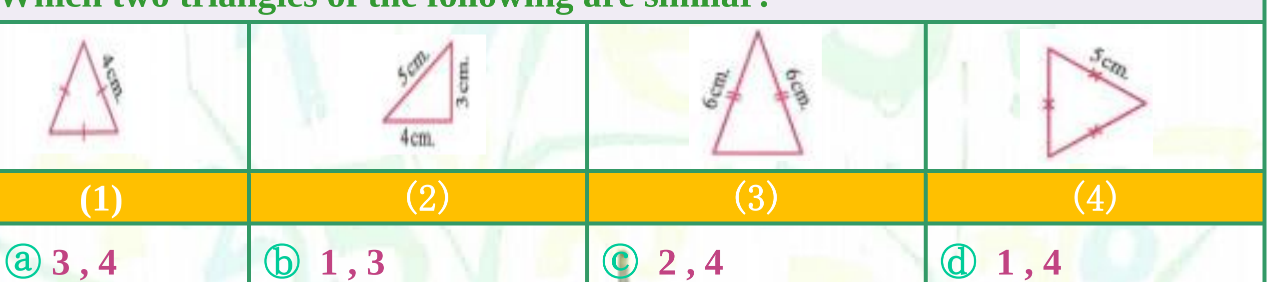
(6) If the two roots of the equation: $x^2 + 3x - m = 0$ are real different ,then m = ….			
ⓐ -2	ⓑ -3	ⓒ -4	ⓓ -5

(7) If the sum of measures of the angles of a regular polygon equals 180° (n – 2) where n is the number of sides then the measure of the angle of a regular octagon by the radian measure equals …………			
ⓐ $\frac{\pi}{3}$	ⓑ $\frac{\pi}{2}$	ⓒ $\frac{3\pi}{4}$	ⓓ $\frac{2\pi}{3}$

(8) If $2\cos\theta = -\sqrt{3}$ and $\pi < \theta < \frac{3\pi}{2}$, then θ = ……….			
ⓐ $\frac{\pi}{3}$	ⓑ $\frac{6\pi}{7}$	ⓒ $\frac{4\pi}{3}$	ⓓ $\frac{7\pi}{6}$

(9) Two similar rectangles the length of the first is 5 cm. and the length of the second is 10 cm. then the ratio between the perimeter of the first to the perimeter of the second equals …………			
ⓐ 1 : 5	ⓑ 1 : 3	ⓒ 1 : 2	ⓓ 2 : 1

(10) Which two triangles of the following are similar?

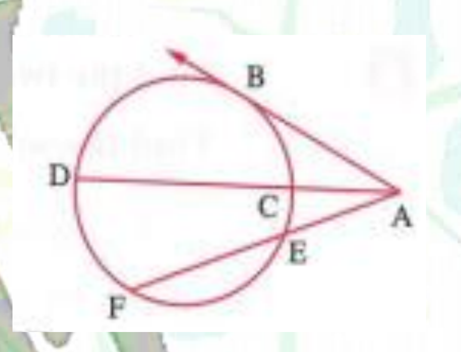


(1)	(2)	(3)	(4)
ⓐ 3 , 4	ⓑ 1 , 3	ⓒ 2 , 4	ⓓ 1 , 4

(11) If the ratio between the perimeters of two similar triangles is 1 : 4 , then the ratio between their two surface areas equals ……….

ⓐ 1 : 2	ⓑ 1 : 4	ⓒ 1 : 8	ⓓ 1 : 16

(12) In the opposite figure :
All the following mathematical expressions are correct except the expression ………..



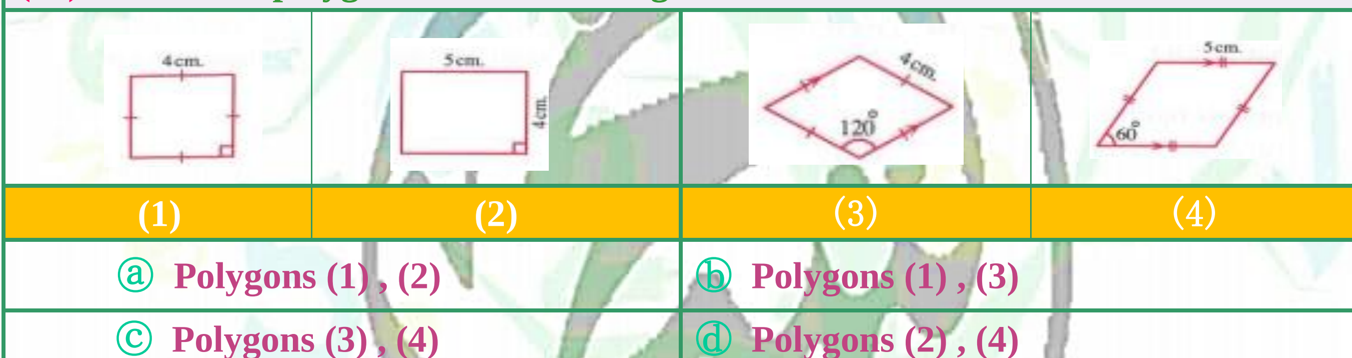
ⓐ $(AB)^2 = AC \times AD$

ⓑ $(AB)^2 = AE \times AF$

ⓒ $AC \times AD = AE \times AF$

ⓓ $AC \times CD = AE \times EF$

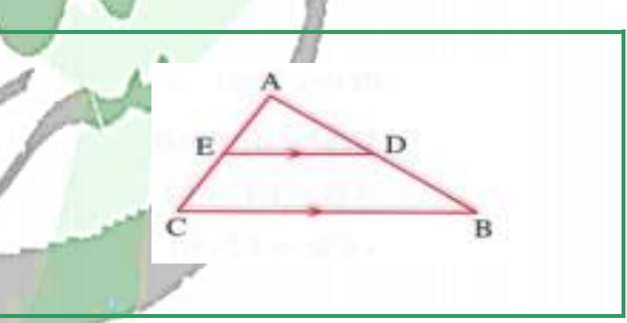
(13) Which two polygons of the following are similar?



(1)	(2)	(3)	(4)

ⓐ Polygons (1) , (2)	ⓑ Polygons (1) , (3)
ⓒ Polygons (3) , (4)	ⓓ Polygons (2) , (4)

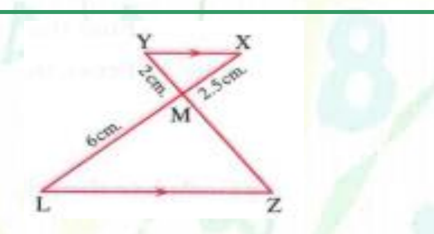
(15) In the opposite figure :
All the following mathematical expressions are correct except ………



ⓐ $\frac{AD}{DE} = \frac{AE}{EC}$	ⓑ $\frac{AD}{DE} = \frac{DE}{BC}$
ⓒ $\frac{AD}{AB} = \frac{AE}{AC}$	ⓓ $\frac{AB}{BD} = \frac{AC}{EC}$

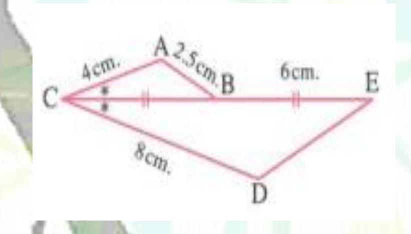
(14) If the ratio between the surface areas of two similar polygons is 16 : 25 , then the ratio between the lengths of two corresponding sides in the two polygons equals.			
ⓐ 2 : 5	ⓑ 4 : 5	ⓒ 16 : 25	ⓓ 16 : 41

(16) In the opposite figure : The length of $\overline{MZ}$ equals ……….	
ⓐ 3.6 cm.	ⓑ 4 cm.
ⓒ 4.2 cm.	ⓓ 4.8 cm.

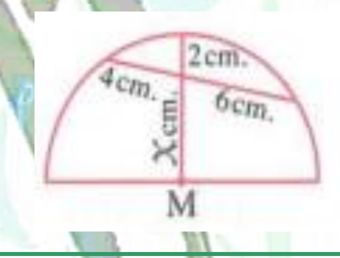


(17) If tan (180° + θ) = 1 where θ is the smallest positive angle ,then θ = ……..			
ⓐ 60°	ⓑ 30°	ⓒ 45°	ⓓ 135°

(18) In the opposite figure: If B is the midpoint of $\overline{CE}$ then DE = ……… cm.	
ⓐ 4	ⓑ 5
ⓒ 6	ⓓ 7



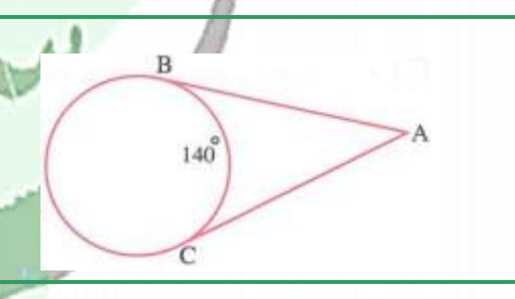
(19) In the opposite figure: M is the centre of semi-circle then x = ……… cm.	
ⓐ 5	ⓑ 7
ⓒ 8	ⓓ 12



(20) The solution set of the inequality (x – 3) (x – 7) < 0 in ℝ is			
ⓐ { 3 , 7 }	ⓑ] 3 , 7 [	ⓒ [3 , 7]	ⓓ ℝ - [2 , 5]

(21) The exterior bisector at the vertex of an isosceles triangle …….. to the base			
ⓐ parallel	ⓑ perpendicular	ⓒ bisects	ⓓ equal

(22) In the opposite figure: $\overline{AB}$, $\overline{AC}$ are two are two tangents to the circle m ($\widehat{BC}$) = 140° ,then m (∠ A) = …	
ⓐ 30°	ⓑ 40°
ⓒ 60°	ⓓ 80°

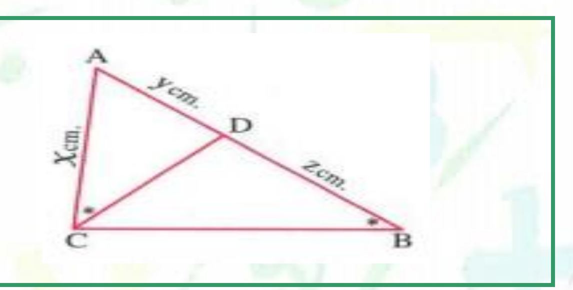


(23) The roots of the equation: k $x^2 - 12x + 9 = 0$ are equal if ………

ⓐ K > 4	ⓑ K < 4	ⓒ K = 4	ⓓ K = 9

(24) In the opposite figure:
If $x^2 - y^2 = 16$
,then y z = ……….. cm².

ⓐ 4	ⓑ 8
ⓒ 12	ⓓ 16

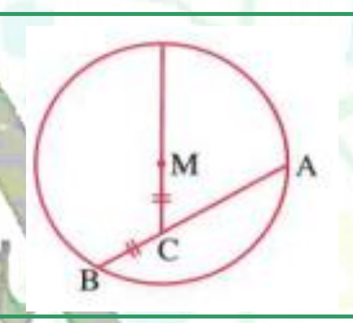


(25) The simplest form of the imaginary number i^{42} is ……

ⓐ 1	ⓑ -1	ⓒ i	ⓓ -i

(26) In the opposite figure :
The diameter of circle M is 12 cm.
, MC = CB and AC = (BC + 1) cm.
,then AB = …….. cm.

ⓐ 4	ⓑ 6
ⓒ 8	ⓓ 9



(27) The degree measure of the angle whose measure $\frac{7\pi}{6}$ equals ………

ⓐ 105°	ⓑ 210°	ⓒ 420°	ⓓ 840°

(28) ABC is a right-angled triangle at A , $\overline{AD} \perp \overline{BC}$ where D ∈ $\overline{BC}$, then $(AB)^2$ = …

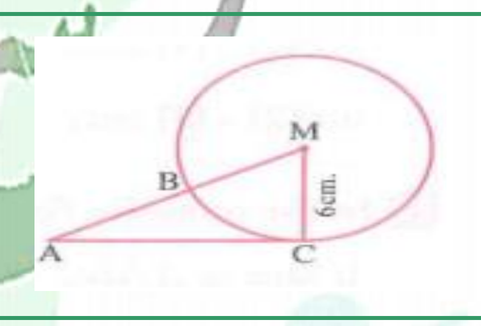
ⓐ BD x BC	ⓑ BD x DC	ⓒ CD x CB	ⓓ AB x AC

(29) the two points (x_1 , cos x_1) (x_2 , cos x_2) lie on the curve of the function $f(x) = \cos x$ where x in radian , then the greatest value of the expression (cos x_1 – cos x_2) = ………..

ⓐ 1	ⓑ 2	ⓒ zero	ⓓ 180°

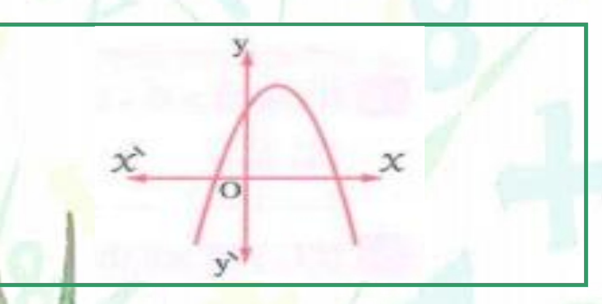
(30) In the opposite figure:
$\overline{AC}$ touches the circle M at C
MC = 6 cm. $P_M(A) = 64$
,then AB = ……… cm.

ⓐ 3	ⓑ 4
ⓒ 5	ⓓ 6



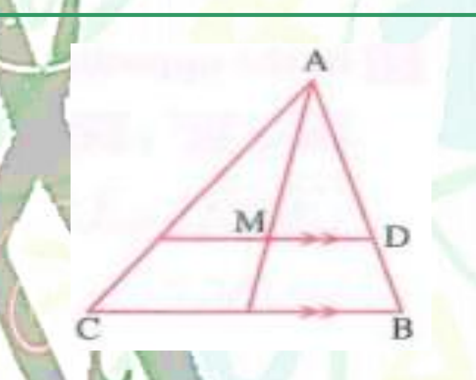
(31) If A and B are the measures of two equivalent angles which of the following represents two equivalent angles also where $C \in \mathbb{Z}$ = ……….	
ⓐ (A + C) , (B + C)	ⓑ (A – C) , (B – C)
ⓒ (CA) , (CB)	ⓓ All the previous.

(32) The opposite figure: represents the curve $y = a x^2 + b x + c$ which of the following is true ……..



ⓐ a > 0 , c > 0	ⓑ a > 0 , c < 0
ⓒ a < 0 , c > 0	ⓓ a < 0 , c < 0

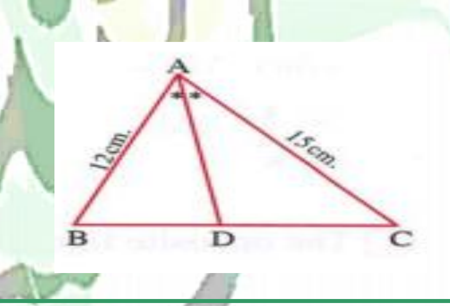
(33) In the opposite figure:
If M is the point of concurrence of medians of Δ ABC and $\overline{DM} \parallel \overline{BC}$,then $\frac{DM}{BC}$ = ……



ⓐ $\frac{1}{2}$	ⓑ $\frac{1}{3}$
ⓒ $\frac{2}{3}$	ⓓ $\frac{1}{4}$

(34) If the curve $y = x (a – x)$, which of the following statements is true? [1] The curve intersects x -axis at (0 , 0) , (a , 0) [2] The vertex of the curve is $(\frac{a}{2},\frac{a}{4})$ [3] The axis of symmetry of the curve is x = a	
ⓐ [1] , [2] only	ⓑ [1] , [3] only
ⓒ [2] , [3] only	ⓓ [1] , [2] and [3]

(35) In the opposite figure:
If area of △ ABC = 72 cm² ,then area of △ ADB = ……. Cm²



ⓐ 24	ⓑ 28
ⓒ 32	ⓓ 40

(36) If cos θ > 0 , sin θ < 0 then lies in the ……… quadrant.			
ⓐ first	ⓑ second	ⓒ third	ⓓ fourth

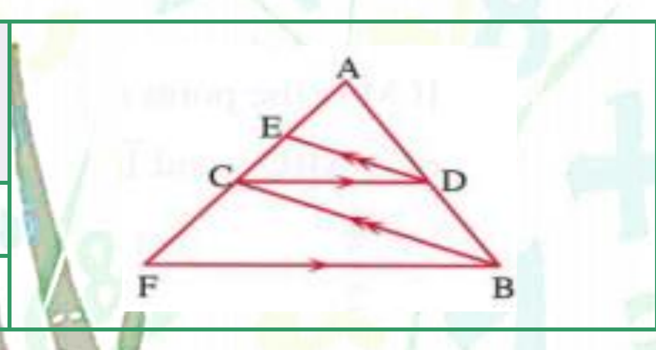
(37) If L , M are the two roots of the equation $x^2 - 5x + 6 = 0$, then the quadratic equation whose roots are L + 1 , M + 1 is ………..

ⓐ $x^2 - 7x + 8 = 0$	ⓑ $(x + 1)^2 - 5(x + 1) + 6 = 0$
ⓒ $x^2 - 7x + 12 = 0$	ⓓ $x^2 + 7x - 10 = 0$

(38) In the opposite figure:

$\overline{DE} \parallel \overline{BC}$, $\overline{DC} \parallel \overline{BF}$

,then AE × AF = ………..



ⓐ $(AC)^2$	ⓑ AD × AB
ⓒ AE × AC	ⓓ AC × AB

(39) ABC is right-angled triangle at B , draw $\overrightarrow{AD}$ to bisect ∠ A and intersects $\overline{BC}$ at D , if the length of $\overline{BD}$ = 24 cm. , BA : AC = 3 : 5 , then the perimeter of Δ ABC = …….. cm.

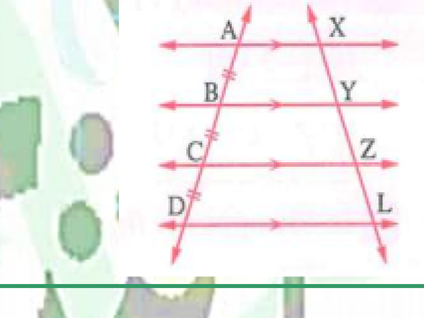
ⓐ 177	ⓑ 192	ⓒ 213	ⓓ 184

(40) If the ratio between the perimeters of two similar polygons is 4 : 9 then the ratio between their areas ………..

ⓐ 2 : 3	ⓑ 4 : 13	ⓒ 16 : 81	ⓓ 4 : 9

(41) In the opposite figure:

$\overleftrightarrow{XA} \parallel \overleftrightarrow{YB} \parallel \overleftrightarrow{ZC} \parallel \overleftrightarrow{LD}$, $\overleftrightarrow{XL}$, $\overleftrightarrow{AD}$ are two transversals, if XZ = 7 then XL = ……….. cm.



ⓐ 7	ⓑ 10
ⓒ 3.5	ⓓ 10.5

(42) The solution set of the inequality $x(x - 1) > 0$ in ℝ is ……….

ⓐ { 0 , 1 }	ⓑ] 0 , 1 [	ⓒ [0 , 1]	ⓓ ℝ - [0 , 1]

(43) The minimum value of function $f : f(\theta) = 5 \cos 7\theta$ ……….

ⓐ 5	ⓑ zero	ⓒ - 5	ⓓ -7

(44) If $\sin \theta = -\frac{1}{2}$ tan $\theta > 0$,then θ = ……….

ⓐ 30°	ⓑ 150°	ⓒ 210°	ⓓ 330°

(45) The triangle in which the measure of two angles is 50° , 60° is similar to the triangle in which the measure of two angles is 60° , ………….

ⓐ 70°	ⓑ 110°	ⓒ 80°	ⓓ 30°

(46) If L , 2 – L are the roots of the equation : $x^2 + k\,x + 6 = 0$, then k = ………..

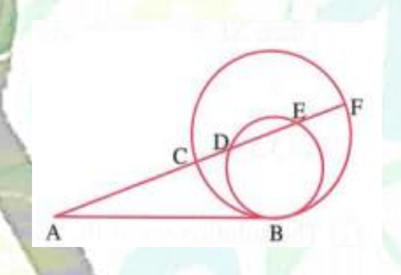
ⓐ 1	ⓑ -2	ⓒ 3	ⓓ 5

(47) The function $f : f(x) = (x - 1)(x + 3)$ is positive in the interval ……….

ⓐ [-3 , 1]	ⓑ] -3 , 1 [	ⓒ ℝ - [-3 , 1]	ⓓ ℝ -] -3 , 1 [

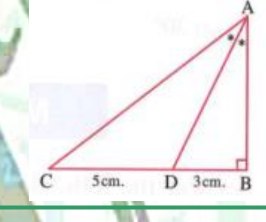
(48) In the apposite figure:
If $\overline{AB}$ is a common tangent to two circles touching externally at B ,then AC : AD = ……. : ……..

ⓐ AB : AF	ⓑ 3 : 4
ⓒ AD : AF	ⓓ AE : AF



(49) In the opposite figure:
AB = ……….. cm.

ⓐ 4	ⓑ 5
ⓒ 6	ⓓ 7



(50) If a bare two rational numbers then the two roots of the equation:
$a\,x^2 + b\,x + b - a = 0$ are …………

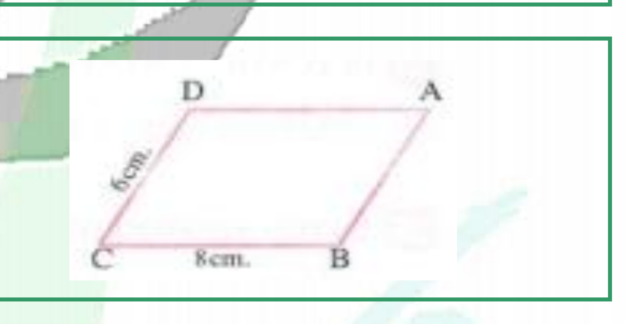
ⓐ complex and non-real.	ⓑ complex conjugate.
ⓒ rationals.	ⓓ equal.

(51) In the opposite figure:
C ∈ $\overline{BD}$, m (∠ D) = m (∠ BAC)
AB = 6 cm. , CD = 5 cm.
, then BC = …….. cm.

ⓐ 3	ⓑ 4
ⓒ 5	ⓓ 6

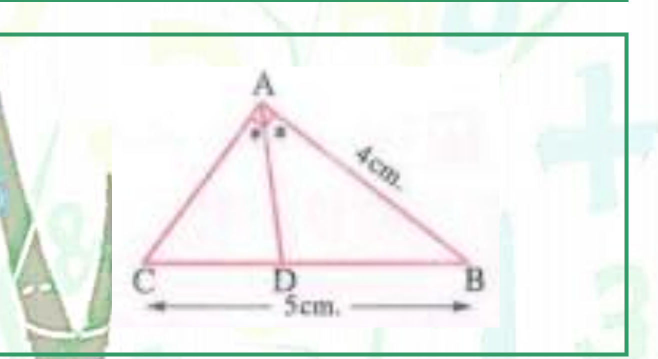
(52) In the opposite figure :
ABCD is a parallelogram ,
its area = 40 cm^2 ,then m (∠A) ≃ ………

ⓐ 37°	ⓑ 56°
ⓒ 53°	ⓓ 34°



(53) If $P_M(A) = P_N(A)$ where M , N are two circles ……….	
ⓐ AM = AN	ⓑ The radius length of M = the radius length of N
ⓒ A lies on the line of intersection of the two circles	
ⓓ A lies on the principle axis of the two circle M , N	

(54) In the opposite figure:
BC = 5 cm. , AB = 4 cm. , $\overline{AB} \perp \overline{AC}$,
then $\frac{BD}{DC}$ = ……..

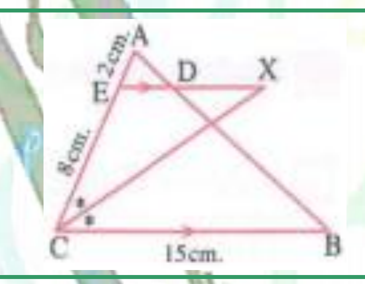


ⓐ $\frac{4}{5}$	ⓑ $\frac{3}{5}$
ⓒ $\frac{3}{4}$	ⓓ $\frac{4}{3}$

(55) The are length in a circle of raduis 6 cm. opposite to central angle of measure $\frac{3\pi}{2}$ is………

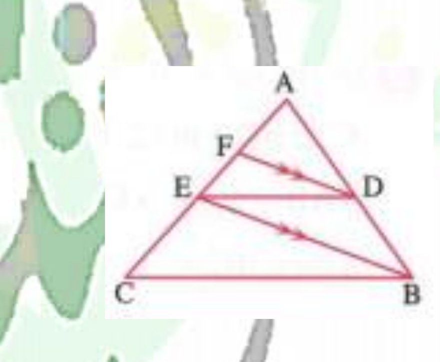
ⓐ $\frac{3\pi}{2}$ cm.	ⓑ 2π cm.	ⓒ $\frac{5\pi}{2}$ cm.	ⓓ 3π cm.

(56) In the opposite figure:
If $\overrightarrow{CX}$ bisects ∠ ACB , $\overline{XD}$ // $\overline{BC}$
,then XD = ……… cm.



ⓐ 3	ⓑ 4
ⓒ 5	ⓓ 6

(57) In the opposite figure:
If $\overline{DF}$ // $\overline{BE}$ to prove that $\overline{DE}$ // $\overline{BC}$ it is sufficient to have …..



ⓐ $\frac{AD}{DB} = \frac{3}{4}$ only
ⓑ AF × AC = $(AE)^2$ only
ⓒ (a) , (b) together
ⓓ nothing of the previous

(58) If ABC is right-angled triangle at B ,sin A + cos C = 1 , then tan C = …………

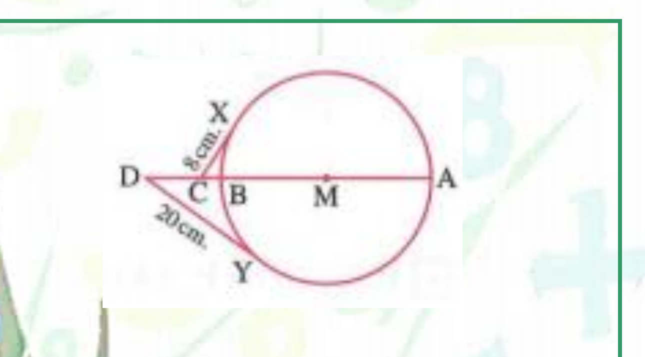
ⓐ 1	ⓑ -1	ⓒ $\frac{1}{\sqrt{3}}$	ⓓ $\sqrt{3}$

(59) If the terminal side of an angle 60° in standard position rotates two and quarter revolutions anticlockwise then the terminal side represents the angle …

ⓐ 60°	ⓑ 120°	ⓒ 150°	ⓓ 240°

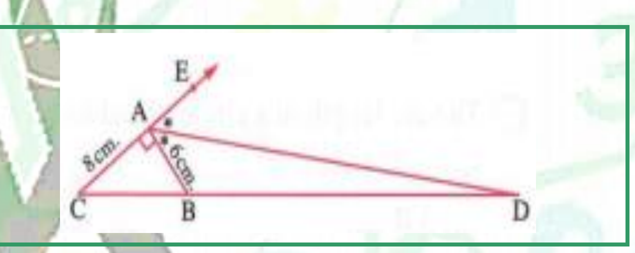
(60) The solution set of the equation: $x^2 + 9 = 0$ in the set of complex numbers is …			
ⓐ { 3 , -3 }	ⓑ { - 3 i }	ⓒ { 3 i , -3 i }	ⓓ ∅

(60) In the opposite figure:
If $\overline{AB}$ is a diameter in circle M
$\overline{CX}$, $\overline{YD}$ are two tangent segments to the circle M , AB = 30 cm. , CX = 8 cm.
DY = 20 cm , then DC = ……..... cm.



ⓐ 2	ⓑ 6
ⓒ 8	ⓓ 10

(61) In the opposite figure:
The area of Δ ABD = …….. cm^2

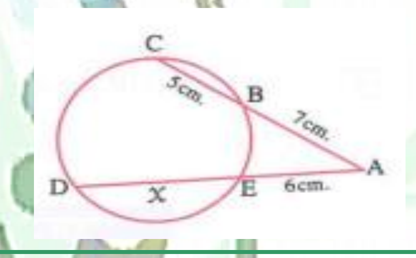


ⓐ 36	ⓑ 48
ⓒ 54	ⓓ 72

(62) If the solution set of the inequality: $x^2 - 4 \leq x + k$ is [-2 , 3] , then k =..........			
ⓐ -6	ⓑ 1	ⓒ 2	ⓓ 10

(63) The range of the function $f(\theta) = 3 \sin 2\theta$ is ………			
ⓐ [-2 , 2]	ⓑ] -2 , 2 [	ⓒ [-3 , 3]	ⓓ] -3 , 3 [

(64) In the opposite figure : AB = 7 cm. , BC = 5 cm. , AE = 6 cm. DE = x cm. , then the value of x = ……. cm.

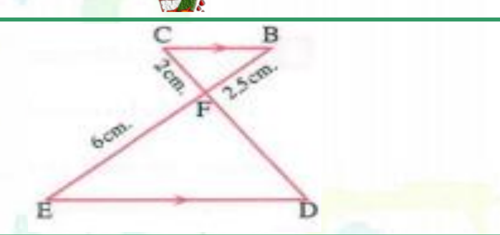


ⓐ 5	ⓑ 14
ⓒ 12	ⓓ 8

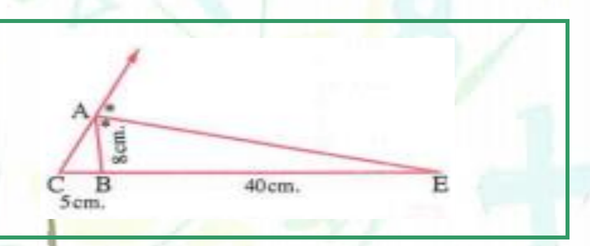
(65) A is a point outside the circle M , $\overrightarrow{AB}$ is a tangent to the circle at B , draw $\overrightarrow{AD}$ to intersect the circle at C and D , if m $(\widehat{DB}) = 150°$, m $(\widehat{BC}) = 80°$, then m (∠ A) = ………..°			
ⓐ 115	ⓑ 35	ⓒ 70	ⓓ 60

(66) The terminal side of angle θ in standard position intersects the unit circle at point B $(x , \frac{3}{5})$ where $x < 0$, then sin (90° + θ) = ………			
ⓐ -0.8	ⓑ -0.6	ⓒ 0.8	ⓓ 0.6

(67) In the opposite figure: FD = ……… cm.	
ⓐ 3.6	ⓑ 4
ⓒ 4.2	ⓓ 4.8



(68) In the opposite figure: AE = ……… cm.	
ⓐ 32	ⓑ 45
ⓒ 48	ⓓ $24\sqrt{3}$

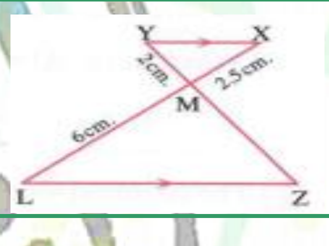


(69) If $\sin x = \cos y$, then $\sin(x + y)$ = ……….			
ⓐ 1	ⓑ zero	ⓒ -1	ⓓ otherwise

(70) If one of the roots of the equation $x^2 - (m + 3)x + 3 = 0$ is additive inverse of the other ,then m = …………			
ⓐ 3	ⓑ -3	ⓒ zero	ⓓ otherwise

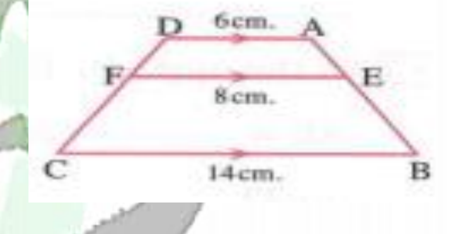
(71) The two roots of the equation: $a x^2 + b x + c = 0$ are real equal if b^2 = ……..			
ⓐ 2 a c	ⓑ a c	ⓒ 4 a c	ⓓ - 4 a c

(72) In the opposite figure: ZM = ……… cm.	
ⓐ 3.6	ⓑ 4
ⓒ 4.2	ⓓ 4.8



(73) The simplest form of the imaginary number i^{73} = ……..			
ⓐ -1	ⓑ 1	ⓒ i	ⓓ -i

(74) In the opposite figure : $\frac{AE}{EB}$ = …………	
ⓐ $\frac{3}{4}$	ⓑ $\frac{4}{7}$
ⓒ $\frac{3}{7}$	ⓓ $\frac{1}{3}$



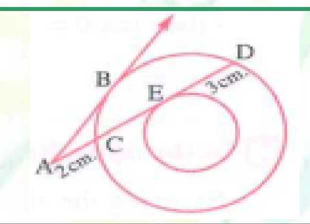
(75) If one of the two roots of the equation: $x^2 - (m + 2)x + 3 = 0$ is additive inverse of the other , then m = ………			
ⓐ -3	ⓑ -2	ⓒ 2	ⓓ 3

(76) If polygon M_1 is magnification of polygon M_2 and k is the ratio of Magnification , then …………			
ⓐ k > 1	ⓑ k < l	ⓒ k = 0	ⓓ 0 < k < 1

(77) The solution set of the equation $x^2 = x$ in ℝ is ……..			
ⓐ{ 0 }	ⓑ { 1 }	ⓒ { -1 , 1 }	ⓓ { 0 , 1 }

(78) In the opposite figure:
AB = …… cm.

ⓐ 4	ⓑ 5
ⓒ 6	ⓓ 8



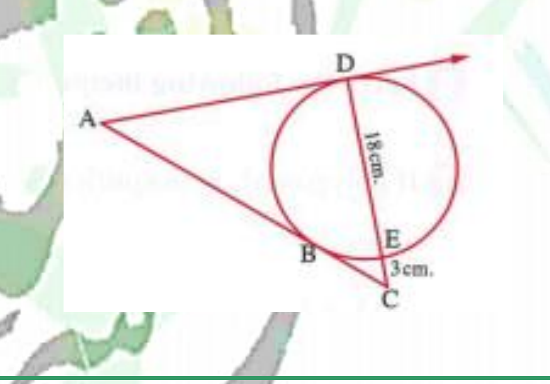
(79) If $\overleftrightarrow{AB}$ is a tangent to circle M at point B and $P_M(A) = 25\ cm^2$.,then AB = …… cm.			
ⓐ 5	ⓑ 10	ⓒ 15	ⓓ 25

(80) If L , M are the two roots of the quadratic equation $(x - a)(x - b) = k$,then the quadratic equation whose roots as a , b is …………	
ⓐ $(x - L)(x - M) = 0$	ⓑ $(x - L)(x - M) + k = 0$
ⓒ $(x - L)(x - M) = k$	ⓓ $x^2 - (L + M)x + k = 0$

(81) The radian measure of central angle opposite to an are of length 3 cm. in a circle its diameter length 4 cm is …………			
ⓐ $(\frac{2}{3})^{red}$	ⓑ $(\frac{3}{2})^{red}$	ⓒ 5^{red}	ⓓ 6^{red}

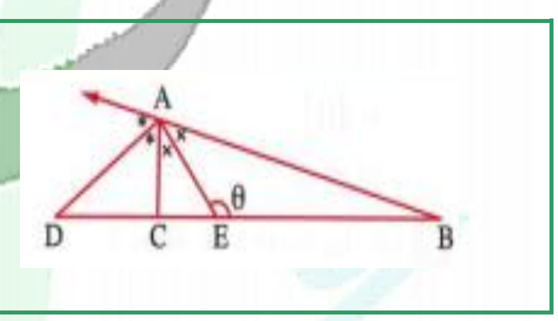
(82) In the opposite figure:
$\overrightarrow{AD}$, $\overrightarrow{AB}$ are two tangents to the circle at D , B respectively. $\overrightarrow{CE}$ intersects the circle at E , D If CE = 3 cm. , ED = 18 cm. ,then (AC – AD) = ……… cm.

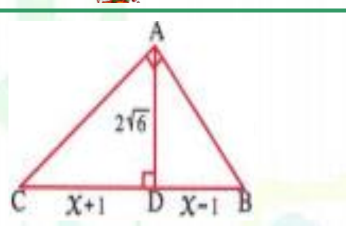
ⓐ $\sqrt{7}$	ⓑ $2\sqrt{7}$
ⓒ $3\sqrt{7}$	ⓓ $6\sqrt{7}$



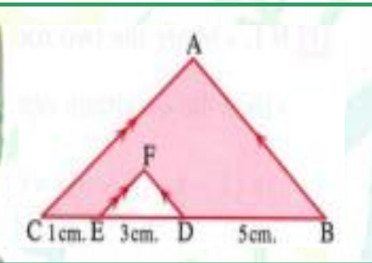
(83) In the opposite figure:
If AD = 8 cm. , AE = 6 cm.
then tan θ = ……….

ⓐ $\frac{-4}{3}$	ⓑ $\frac{-3}{4}$
ⓒ $\frac{3}{4}$	ⓓ $\frac{4}{3}$



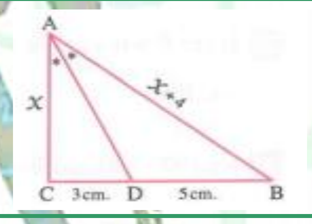
(84) In the opposite figure: By using the shown givens, then x = …		
ⓐ 5	ⓑ 12	
ⓒ 10	ⓓ 2.5	

(85) If sin θ = cos θ where θ is the measure of an acute positive angle , then tan 2 θ = …			
ⓐ 1	ⓑ -1	ⓒ undefined	ⓓ $\sqrt{3}$

(86) In the opposite figure: If the area of Δ DEF = 6 cm ,then the area of the shaded area = ……. cm^2		
ⓐ 27	ⓑ 36	
ⓒ 48	ⓓ 54	

(87) The function f : $f(x) = a x^2 + b x + c$ has one sign in ℝ when ……..	
ⓐ $b^2 - 4ac > 0$	ⓑ $b^2 - 4ac < 0$
ⓒ $b^2 - 4ac = 0$	ⓓ $b^2 - 4ac \geq 0$



(88) In the opposite figure: x = ………. cm.		
ⓐ 3	ⓑ 4	
ⓒ 5	ⓓ 6	

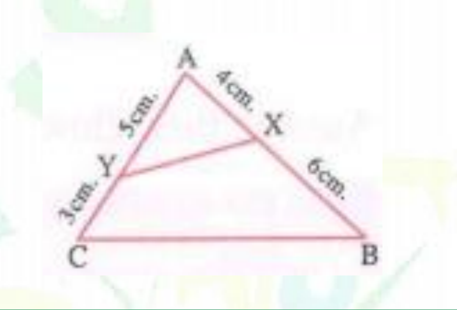
(89) The simplest form of the expression: sin (180° + θ) × sec (270° + θ) = ……..			
ⓐ 2 sin θ	ⓑ 1	ⓒ -1	ⓓ 2 sec θ

(90) If (3 x – 5)° is the smallest positive measure , (3 y – 5)° is the greatest negative measure of two equivalent angles then x – y = ………..			
ⓐ 360°	ⓑ 180°	ⓒ 120°	ⓓ 90°

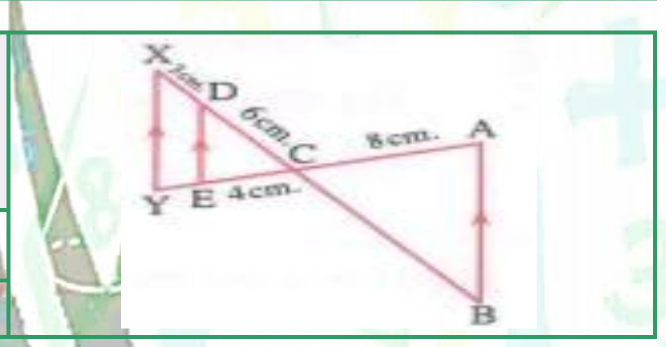
(91) $\cos^{-1} x + \sin^{-1} x$ = ……….			
ⓐ zero	ⓑ $\frac{\pi}{4}$	ⓒ $\frac{\pi}{2}$	ⓓ π

(92) If $x + y i = (1 + i)^3$,then $x + y$ = ………..			
ⓐ 4	ⓑ 2	ⓒ zero	ⓓ 6

(93) In the opposite figure: ABC is triangle, $x \in \overline{AB}$, $y \in \overline{AC}$ If XBCY is a cyclic quadrilateral then ………….	
ⓐ $\frac{AX}{AB} = \frac{AY}{AC}$	ⓑ AX × AB = AY × AC
ⓒ $\frac{AX}{XB} = \frac{AY}{YC}$	ⓓ $(XY)^2 = AX \times AB$



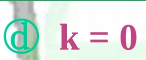
(94) In the sprite figure: $\overline{AB} \parallel \overline{DE} \parallel \overline{XY}$, AC = 8 cm. ,CE = 4 cm. , CD = 6 cm. , DX = 3 cm. then BC + EY = ……. cm.	
ⓐ 12	ⓑ 15
ⓒ 8	ⓓ 14



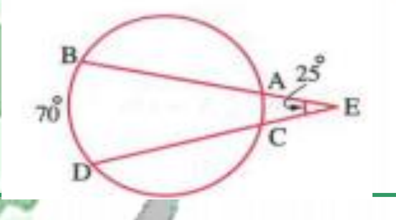
(95) The equation that has the two roots 3 i – 3 i is ……..			
ⓐ $x^2 + 9 = 0$	ⓑ $x^2 = 9$	ⓒ $x^2 + 3 = 0$	ⓓ $x^2 = 3$

(96) If sin $\theta > 0$, cos $\theta < 0$, then θ lies in the …….. quadrant.			
ⓐfirst	ⓑ second	ⓒ third	ⓓ fourth

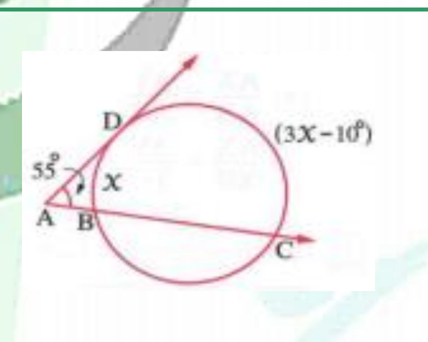
(97) sin (90° – θ) sec θ = …….			
ⓐ 1	ⓑ -1	ⓒ zero	ⓓ 90°

(98) If k is the scale factor of similarity between two similar polygons, then the two polygons are congruent if ……….			
ⓐ k > 1	ⓑ 0 < k < 1	ⓒ k = 1 	ⓓ k = 0

(99) In the opposite figure: m ($\widehat{AC}$) = ……… °	
ⓐ 20	ⓑ 30
ⓒ 40	ⓓ 50



(100) In the opposite figure: If $\overrightarrow{AD}$ is a tangent to the circle ,m (∠A) = 55° , m ($\widehat{DC}$) = (3 x – 10°) m ($\widehat{DB}$) = x , then x = …….. °	
ⓐ 120	ⓑ 60
ⓒ 30	ⓓ 15



(101) If θ is the measure of an acute angle and sin (θ + 10°) = cos (50°) then θ = …			
ⓐ 30°	ⓑ 40°	ⓒ 20°	ⓓ 50°

(102) The ratio between the length of two radii of two circles is 3 : 5 , if the area of the smaller circle is 27 cm^2, then the area of the greater circle equals …… cm^2			
ⓐ 45	ⓑ 50	ⓒ 75	ⓓ 100

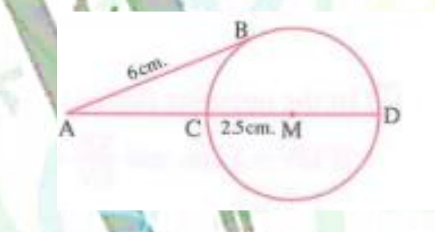
(103) If x = -1 is one of the two roots of the equation: $x^2 - k\,x - 6 = 0$ then k = …….			
ⓐ 5	ⓑ - 5	ⓒ 6	ⓓ - 6

(104) In Δ ABC , $\overrightarrow{AD}$ bisects ∠ A internally and AB > AC, then: DC …….. DE			
ⓐ >	ⓑ ≥	ⓒ <	ⓓ =

(105) The angle of measure 3932° lies in ………. Quadrant.			
ⓐ first	ⓑ second	ⓒ third	ⓓ fourth

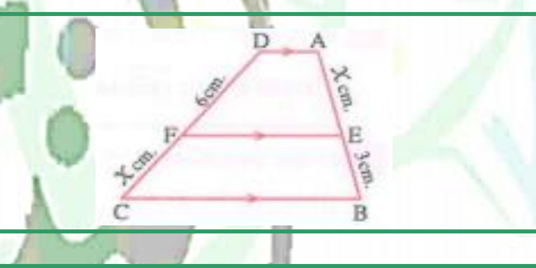
(106) In the opposite figure:
$\overline{AB}$ is a tangent segment to circle M
AB = 6 cm. , CM = 2.5 cm.
then AC = ……. cm.

ⓐ 9	ⓑ 4
ⓒ 2.5	ⓓ 5



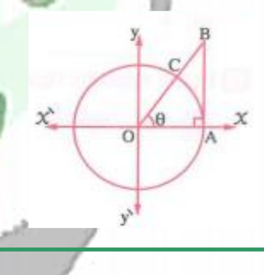
(107) In the opposite figure:
x = ……….. cm.

ⓐ 6	ⓑ $3\sqrt{2}$
ⓒ $3\sqrt{3}$	ⓓ 18



(108) In the opposite figure:
$\overline{AB}$ is a tangent segment of a unit circle , then OB = ………..

ⓐ sin θ	ⓑ cos θ
ⓒ csc θ	ⓓ sec θ

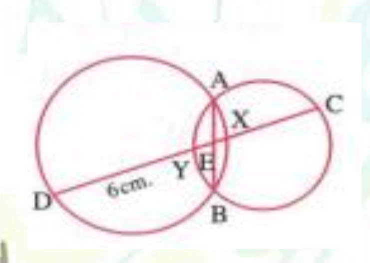


(109) The function f : f (x) = 3 – x is non-negative at x ∈ ………			
ⓐ] - ∞ , 3 [	ⓑ] - ∞ , 3]	ⓒ [3 , ∞ [	ⓓ] 3 , ∞ [

(110) The degree measure of an inscribed angle opposite an are whose length 5π cm. in a circle with radius 15 cm. equals ………..			
ⓐ 120°	ⓑ 60°	ⓒ 30°	ⓓ 90°

(111) In the opposite figure:
If DY = 6 cm. and $\frac{XE}{EY} = \frac{2}{3}$,then CX = …….. cm

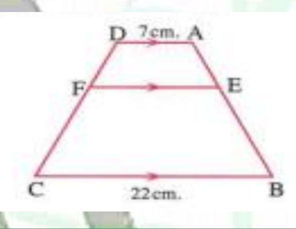
ⓐ 2	ⓑ 3
ⓒ 4	ⓓ 5



(112) If the function $f : f(x) = a \cos b x$ where $a > \theta$ is a periodic function and its Period $\frac{\pi}{2}$ and its range [-1 , 1] , then $\left|\frac{a}{b}\right|$ = ………..			
ⓐ $\frac{1}{2}$	ⓑ 1	ⓒ $\frac{1}{8}$	ⓓ $\frac{1}{4}$

(113) In the opposite figure:
$\frac{AE}{EB} = \frac{2}{3}$, then FE = ……….. cm.

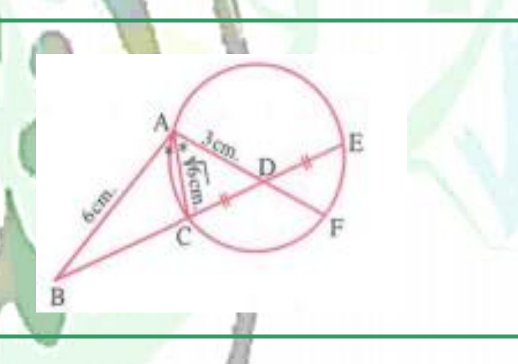
ⓐ 9	ⓑ 11
ⓒ 13	ⓓ 15



(114) If Δ ABC ~ Δ DEF , m (∠A) = 50° , m (∠E) = 60° , then m(∠C)= ………..			
ⓐ 110°	ⓑ 70°	ⓒ 100°	ⓓ 120°

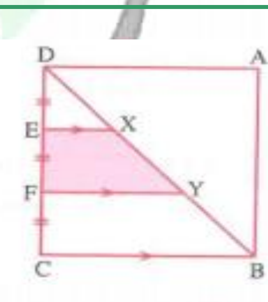
(115) In the opposite figure :
$\overrightarrow{AC}$ bisects ∠ BAD , D is the midpoint of $\overline{EC}$, AC = $\sqrt{6}$ cm. , AD = 3 cm. AB = 6 cm. , then DF = …….. cm.

ⓐ 2	ⓑ 3
ⓒ 3.5	ⓓ 4



(116) In the opposite figure:
ABCD is a square of side length 6 cm. DE = EF = FC ,then the area of (polygon XYFE) = …… cm^2.

ⓐ 6	ⓑ 8
ⓒ 10	ⓓ 12



(117) If L , M are the two roots of the quadratic equation $x^2 + 1 = 0$, then $L^{2018} + M^{2018}$ =…			
ⓐ -2 i	ⓑ 2 i	ⓒ -2	ⓓ 2018

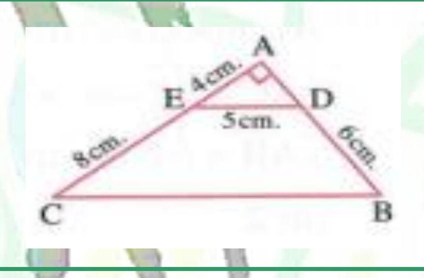
(118) If one of the two roots of the equation $(x + k)^2 - 6x = 0$ is additive inverse of the other , then k =……….			
ⓐ 6	ⓑ - 6	ⓒ 3	ⓓ 9

(119) If the solution set of the inequality $x^2 - 10 < bx$ is] -2 , 5 [then b = ……….			
ⓐ -10	ⓑ -2	ⓒ 3	ⓓ 5

(120) The quadratic equation whose roots $\frac{3}{i}$, $\frac{3+3i}{1-i}$ is ………….	
ⓐ $x^2 - 3x + 9 = 0$	ⓑ $x^2 + 9 = 0$
ⓒ $x^2 + 9x + 9 = 0$	ⓓ $x^2 = 9$

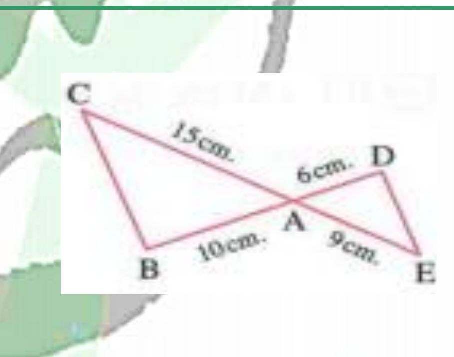
(121) ABC is a triangle in which AB = 8 cm. , AC = 6 cm. , BC = 7 cm. Draw $\overrightarrow{AD}$ bisects ∠ BAC , $\overrightarrow{AD} \cap \overline{BC}$ = {D} , then BD = ………. cm.			
ⓐ 3	ⓑ 6	ⓒ 4	ⓓ $\sqrt{17}$

(122) In the opposite figure : $\frac{DE}{BC}$ = ………..	
ⓐ $\frac{1}{2}$	ⓑ $\frac{3}{4}$
ⓒ $\frac{1}{3}$	ⓓ $\frac{2}{3}$



(123) If one of the roots of the equation: $3x^2 - (k + 2)x + k^2 + 2k = 0$ is the multiplicative inverse of the other ,then k = ………			
ⓐ - 3 or 1	ⓑ - 3 or - 1	ⓒ 3 or - 1	ⓓ 3 or 1

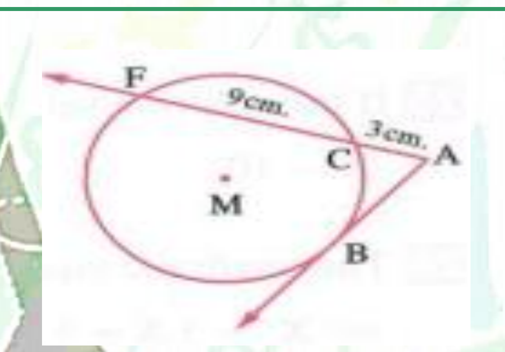
(124) In the opposite figure: $\overline{DB} \cap \overline{EC}$ = {A} , AE = 9 cm. , AB = 10 cm. , AC = 15 cm. DA = 6 cm. , a (Δ ADE) = $36cm^2$, then a (Δ ABC) = … cm^2	
ⓐ 60	ⓑ 75
ⓒ 100	ⓓ 225



(125) The range of the function $f : f(x) = 4 \sin x$ where $x \in [0, \pi]$ equals ………..			
ⓐ [0 , 4]	ⓑ [0 , 4 [	ⓒ [- 4 , 0]	ⓓ [- 4 , 4]

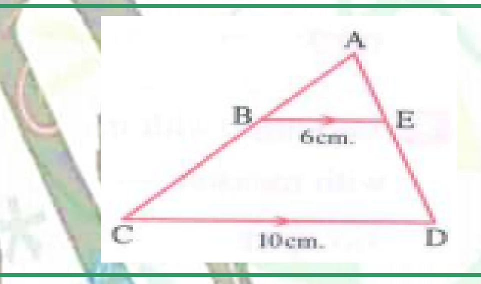
(126) If $10 \sin x = 6$, where x is the greatest positive angle , $x \in [0, 2\pi[$, then the numerical value of the expression : sec (540° + x) equals …………			
ⓐ $\frac{3}{5}$	ⓑ $\frac{-5}{4}$	ⓒ $\frac{5}{4}$	ⓓ $\frac{-5}{3}$

(127) In the opposite figure:
$\overrightarrow{AB}$ touches the circle M at B
$\overrightarrow{AF}$ intersects the circle M at the two points C , F respectively. If AC = 3 cm. CF = 9 cm. , then $P_M(A)$ = ……….



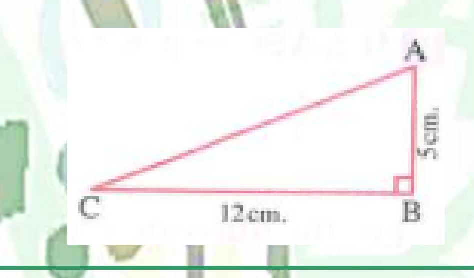
ⓐ 6	ⓑ 9
ⓒ 27	ⓓ 36

(128) In the opposite figure :
If $\overline{BE} // \overline{DC}$,then $\frac{\text{area of } \Delta \text{ ABE}}{\text{area of trapezium BCDE}} =$



ⓐ $\frac{25}{81}$	ⓑ $\frac{3}{5}$
ⓒ $\frac{9}{16}$	ⓓ $\frac{9}{25}$

(129) In the opposite figure :
$\sin\left(\tan^{-1}\left(\frac{5}{12}\right)\right) =$ ………….



ⓐ $\frac{5}{12}$	ⓑ $\frac{5}{13}$
ⓒ $\frac{12}{13}$	ⓓ 13

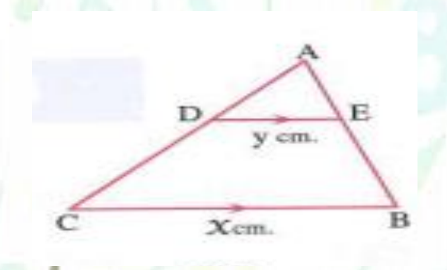
(130) If L , M are the two roots of the equation : $x^2 + 3x - 4 = 0$,then LM = ……..			
ⓐ 3	ⓑ -3	ⓒ 4	ⓓ - 4

(131) The solution set of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is ………….			
ⓐ { - 2 }	ⓑ { 3 }	ⓒ { - 3 , 3 }	ⓓ ∅

(132) If S , is the solution set of the inequality : $x^2 - x - 2 \le 0$ and S_2 , is the solution set of the inequality : $x^2 + x - 2 \le 0$, then $S_1 \cap S_2$ = …………			
ⓐ ∅	ⓑ [- 2 , 2]	ⓒ [- 1 , 1]	ⓓ $\mathbb{R}$ -] – 1 , 1 [

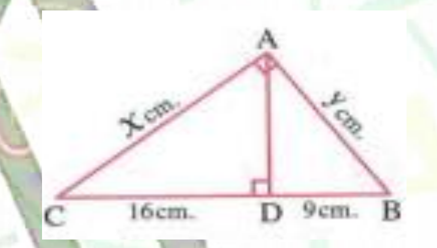
(133) The angle with measure 585° in standard position is equivalent to the angle with measure ………..			
ⓐ $\frac{1}{4}\pi$	ⓑ $\frac{5}{4}\pi$	ⓒ $\frac{3}{4}\pi$	ⓓ $\frac{7}{4}\pi$

(134) In the opposite figure: If $\overline{DE}$ // $\overline{BC}$, DE = y cm. BC = x cm. , and $2x^2 - 3xy - 5y^2 = 0$. AB = 10 cm. , then EB = ……cm.	
ⓐ 3	ⓑ 4
ⓒ 6	ⓓ 8



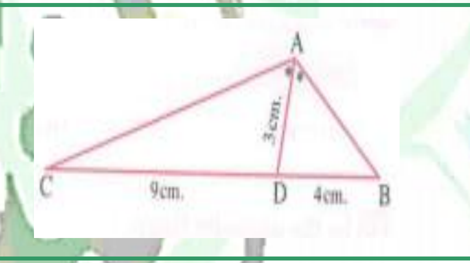
(135) If Δ ABC ~ Δ XYZ and AB = 3 XY , then $\frac{a(\Delta XYZ)}{a(\Delta ABC)} = \frac{\dots}{\dots}$			
ⓐ $\frac{1}{3}$	ⓑ $\frac{1}{9}$	ⓒ $\frac{4}{1}$	ⓓ $\frac{9}{1}$

(136) In the opposite figure : $\frac{y}{x}$ = ………..	
ⓐ 1	ⓑ $\frac{4}{3}$
ⓒ $\frac{3}{4}$	ⓓ 2



(137) The function $y = \sin(\frac{\pi}{4} + x)$ has maximum value at x = …………			
ⓐ $\frac{\pi}{2}$	ⓑ $\frac{-\pi}{2}$	ⓒ $\frac{\pi}{4}$	ⓓ zero

(138) In the opposite figure : AB × AC = …….. cm^2	
ⓐ 36	ⓑ 45
ⓒ 12	ⓓ 27

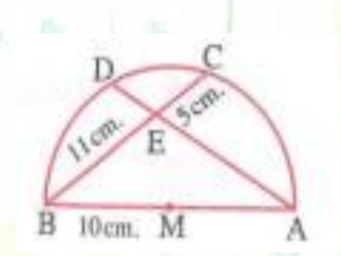


(139) In circle M if two chords $\overline{AB}$ and $\overline{CF}$ intersecting at D , then ………	
ⓐ $P_M(D) = (AB)^2 - r^2$	ⓑ AD × DB = AM × MB
ⓒ $P_M(D)$ + AD × DB = zero	ⓓ $P_M(D)$ = CD × DF

(140) If tan (4 θ) = cot (5 θ) , then sin (3 θ) = ……… where 3 θ is the measure of acute angle.			
ⓐ $\frac{1}{2}$	ⓑ 1	ⓒ - 1	ⓓ $\frac{\sqrt{3}}{2}$

(141) If the degree measure of an angle is 64° 48\` , then its radian measure is ……….			
ⓐ 0.18^{rad}	ⓑ 0.36^{rad}	ⓒ 11.3^{rad}	ⓓ $\frac{9}{25}\pi$

(142) In the opposite figure: The radius length of semicircle (M) = 10 cm., then ED = ………… cm.	
ⓐ $\frac{50}{13}$	ⓑ $\frac{55}{13}$
ⓒ $\frac{57}{13}$	ⓓ $\frac{59}{13}$



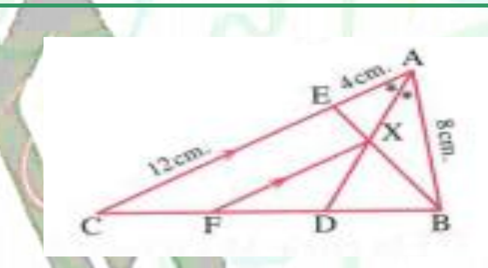
(143) If the two roots of the equation : a x^2 + b x + c = 0 are equal in value but different in signs ,then …………			
ⓐ c = 0	ⓑ a = 0	ⓒ b = 0	ⓓ otherwise

(144) In the opposite figure :



$\frac{DF}{BC}$ = ………..

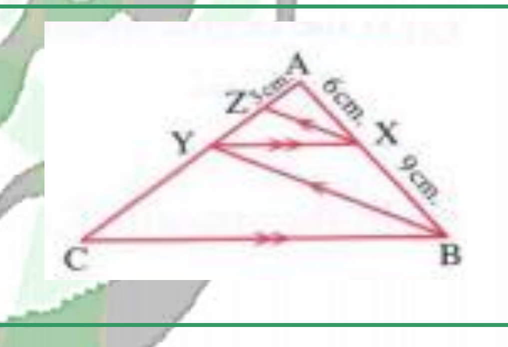
ⓐ $\frac{4}{3}$	ⓑ $\frac{2}{3}$
ⓒ $\frac{3}{5}$	ⓓ $\frac{1}{3}$



(145) If the distance between point A from the centre of a circle equals 24 cm. and the power of this point with respect to this circle equals 176 , then the radius length of this circle equals ……. cm.			
ⓐ $4\sqrt{47}$	ⓑ 400	ⓒ 20	ⓓ 38

(146) The length of an are opposite to a central angle of measure 150° in a circle with radius cm. length 8 cm. equals ……….. cm.			
ⓐ $\frac{20}{3}\pi$	ⓑ $\frac{17}{2}\pi$	ⓒ 8π	ⓓ 20

(147) In the opposite figure: $\overline{XY}$ // $\overline{BC}$, $\overline{XZ}$ // $\overline{BY}$ AX = 6 cm. , XB = 9 cm. , AZ = 3 cm. ,then the length of $\overline{ZC}$ = ……… cm.	
ⓐ 4.5	ⓑ $15\frac{3}{4}$
ⓒ 15	ⓓ $12\frac{3}{4}$



(148) If sin 2 θ = cos θ , then θ could be equal ………. °			
ⓐ 18	ⓑ 30	ⓒ 36	ⓓ 45

(149) If $f(x) = x + 2$, where $x \in]-4, 3[$, then $f(x)$ is positive at $x \in$ ………..			
ⓐ $]-\infty, -2[$	ⓑ $]-2, \infty[$	ⓒ $]-4, -2[$	ⓓ $]-2, 3[$

(150) If (2 i) is a root of the quadratic equation : $x^2 + a x + b = 0$ where the coefficients of its terms are real numbers, then all the following are true except ………..

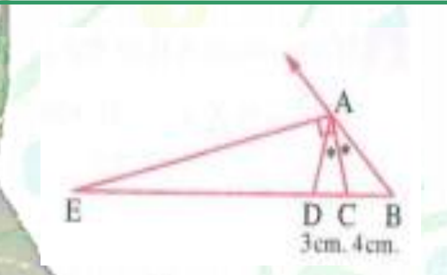
ⓐ The other root of the quadratic equation is (- 2 i)

ⓑ The sum of the roots zero

ⓒ The product of the roots = - 4

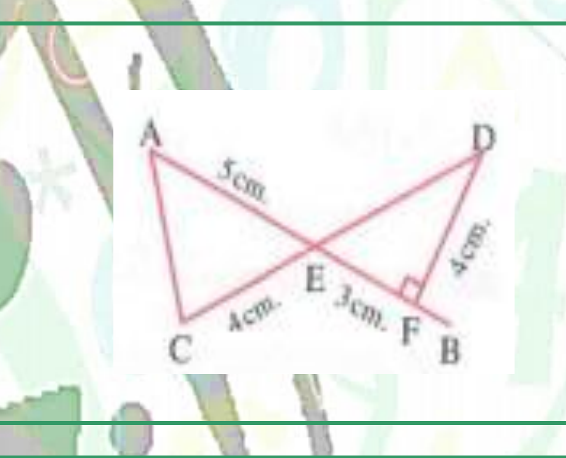
ⓓ The discriminant of the quadratic equation < zero

(151) In the opposite figure :
$\overrightarrow{AC}$ bisects ∠ A of triangle ABD internally.
$\overline{AE} \perp \overline{AC}$, BC = 4 cm.CD = 3 cm.
, then BE : ED = …………



ⓐ 7 : 4	ⓑ 7 : 3
ⓒ 3 : 4	ⓓ 4 : 3

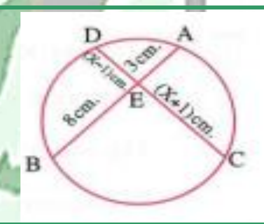
(152) In the opposite figure :
If $\overline{AB} \cap \overline{DC}$ = {E} , AE = 5 cm.
EF = 3 cm. , EC = 4 cm. , DF = 4 cm.
$\overline{DF} \perp \overline{BE}$ the points A , B , C , D lie on the circumference of a circle
then the length of $\overline{FB}$ = ……. cm.



ⓐ 0.5	ⓑ 1
ⓒ 1.5	ⓓ 2

(153) If the two roots of the equation : $4x^2 - 12x + c = 0$ are real and equal ,then c =			
ⓐ 3	ⓑ 4	ⓒ 9	ⓓ 16

(154) In the opposite figure :
x = …………



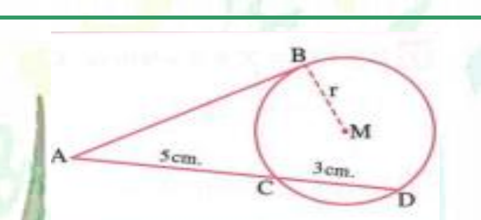
ⓐ 25	ⓑ 24
ⓒ 5	ⓓ 8

(155) The solution set of the equation : $(x + 1)^2$ zero in ℝ is ………….			
ⓐ { - 1 }	ⓑ { 1 }	ⓒ { - 1 , 1 }	ⓓ ∅

(156) If $b^2 - 4ac < 0$ in the equation $a x^2 + b x + c = 0$, then the solution set of the inequality $a x^2 + b x + c < 0$ where a is negative is ………			
ⓐ $\mathbb{R}$	ⓑ $\emptyset$	ⓒ $\mathbb{R}^+$	ⓓ $\mathbb{R}^-$

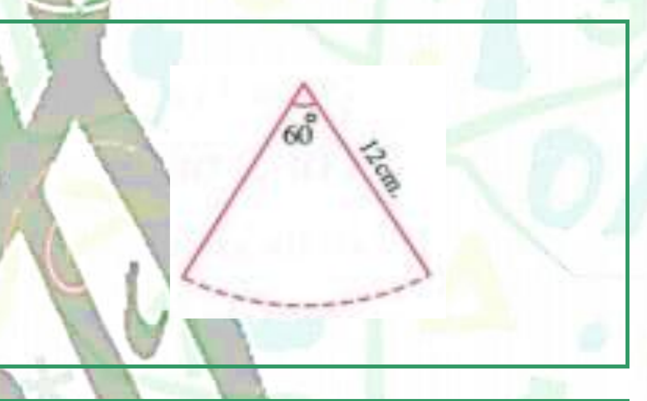
(157) All …………. are similar.			
ⓐ triangles	ⓑ rectangles	ⓒ parallelograms	ⓓ squares

(158) In the opposite figure:
$P_M(A) =$ ………



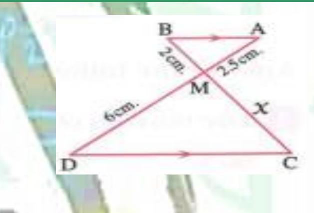
ⓐ 25	ⓑ $(AB)^2 - r^2$
ⓒ 40	ⓓ $(AM)^2 - (AB)^2$

(159) In the opposite figure : A pendulum swings through an angle of measure 60° If the length of its string is 12 cm. then the length of the circular path covered by , the pendulum equals ……



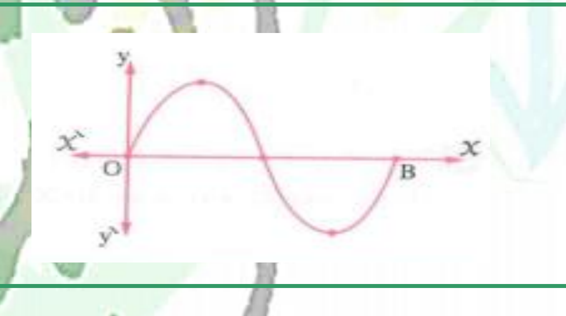
ⓐ 3π cm.	ⓑ 4π cm.
ⓒ 6π cm.	ⓓ 8π cm.

(160) In the opposite figure :
$x =$ ………… cm.



ⓐ 3.6	ⓑ 4
ⓒ 4.2	ⓓ 4.8

(161) The opposite figure:
represents the curve $y = 3 \sin \frac{1}{2} x$,then the x coordinates of the point B is …

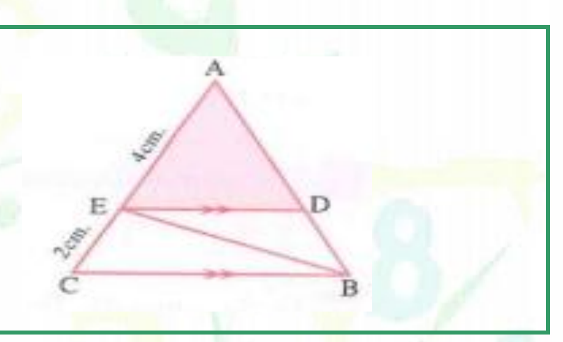


ⓐ $\frac{\pi}{2}$	ⓑ π
ⓒ 2π	ⓓ 4π

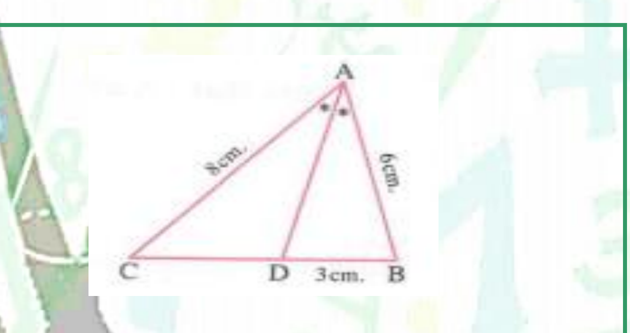
(162) $\sec(\cos^{-1} \text{zero}) =$ …………..			
ⓐ 1	ⓑ - 1	ⓒ undefind	ⓓ zero

(163) The angle with measure (- 120°) lies in the …….. quadrant.			
ⓐ first	ⓑ second	ⓒ third	ⓓ fourth

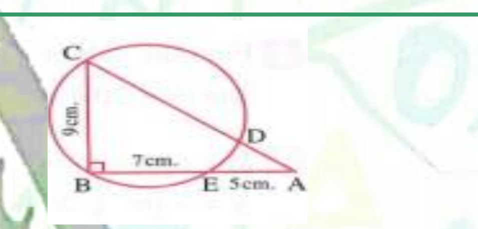
(164) In the opposite Figure : If $\overline{DE}$ // $\overline{BC}$ and the area of (Δ EBC) = 9 cm^2., then the area of (Δ ADE) = ………cm^2.	
ⓐ 6	ⓑ 12
ⓒ 18	ⓓ 27



(165) In the opposite figure : $\overrightarrow{AD}$ bisects ∠BAC , AB = 6 cm. AC = 8 cm. , BD = 3 cm. ,then AD = ………… cm.	
ⓐ 4	ⓑ 5
ⓒ 6	ⓓ 8

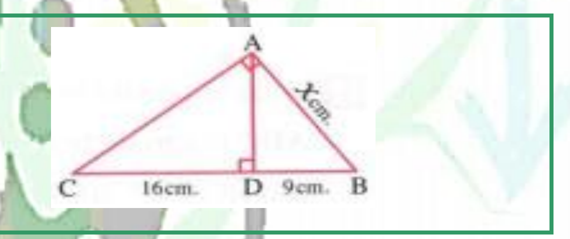


(166) In the opposite figure : DC = …………. Cm.	
ⓐ 9	ⓑ 10
ⓒ 11	ⓓ 12

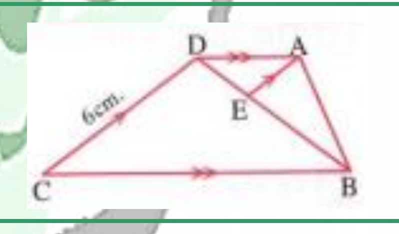


(164) If a , b and c are integers , a + b + c = 0 , a ≠ c , then the roots of the equation: (b + c – a) x^2 + (c + a – b) x + (a + b – c) = 0 are ………..	
ⓐ real and equal	ⓑ distinct rational real
ⓒ distinct irrational real	ⓓ not real

(165) In the opposite figure : x = ………….	
ⓐ 9	ⓑ 12
ⓒ 20	ⓓ 15



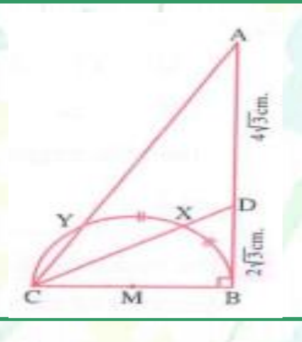
(166) In the opposite figure : If BE = 2 ED ,then AB = ….. cm.	
ⓐ 1	ⓑ 2
ⓒ 3	ⓓ 4



(167) The sign of function f : f (x) = 7 – x is negative in the interval …………			
ⓐ] - ∞ , 7 [	ⓑ] - ∞, ∞ [	ⓒ] 7 , ∞ [	ⓓ] – 7 , 7 [

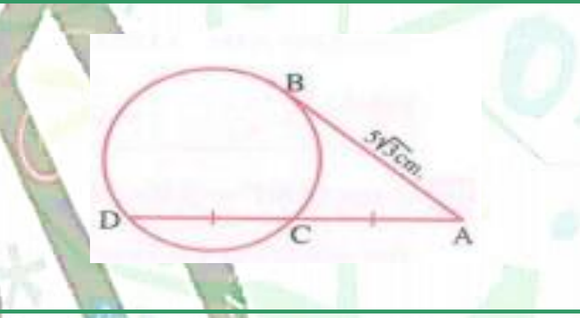
(168) If $\sin\theta = -\frac{1}{2}$, $\cos\theta = \frac{\sqrt{3}}{2}$, then θ = …………			
ⓐ 30°	ⓑ 150°	ⓒ 210°	ⓓ 330°

(169) In the opposite figure : If m $(\widehat{BX})$ = m $(\widehat{XY})$, BD = $2\sqrt{3}$ cm. , AD = $4\sqrt{3}$ cm. ,then AY = ……….. cm.	
ⓐ $4\sqrt{3}$	ⓑ 6
ⓒ 9	ⓓ 12

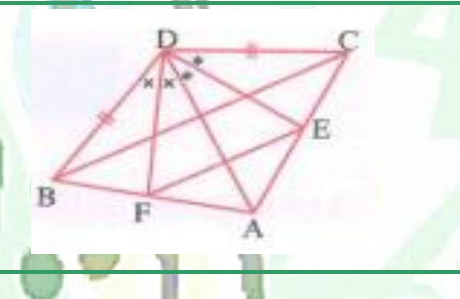


(170) If (2 + 3 i) + (1 – i) = x + y i , then x + y = ………			
ⓐ 2	ⓑ - 4	ⓒ 5	ⓓ 7

(171) In the opposite figure: $\overline{AB}$ is a tangent segment , C is a midpoint of $\overline{AD}$,AB = $5\sqrt{3}$ cm. , then CD = …….. cm.	
ⓐ $2\sqrt{6}$	ⓑ $5\sqrt{6}$
ⓒ 5	ⓓ $2.5\sqrt{6}$



(172) In the opposite figure : $\frac{CD}{DA}$ = ………..	
ⓐ $\frac{AE}{EC}$	ⓑ $\frac{DE}{DF}$
ⓒ $\frac{AC}{AB}$	ⓓ $\frac{BF}{FA}$

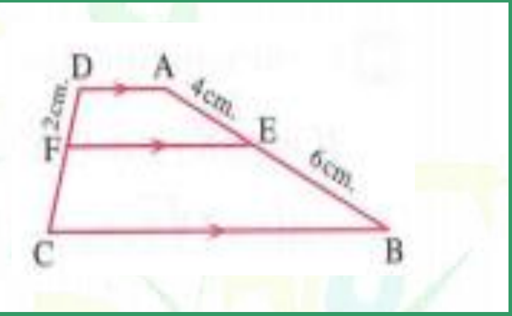


(173) If $f(x) = x^2 - 7x + 12$, $x \in \mathbb{R}$, then all the following are true except ……..
ⓐ the solution set of the equation $f(x) = 0$ is { 3 , 4 }
ⓑ the solution set of the inequality $f(x) > 0$ is $\mathbb{R}$ - [3 , 4]
ⓒ the solution set of the inequality $f(x) < 0$ is] 3 , 4 [
ⓓ $f(x)$ is positive in the interval $\mathbb{R}$ -] 3 , 4 [

(174) The measure of the central angle subtends an are of length equals the length of the diameter of the circle to the nearest degree equals ………..			
ⓐ 113	ⓑ 115	ⓒ 120	ⓓ 180

(175) **In the opposite figure :**

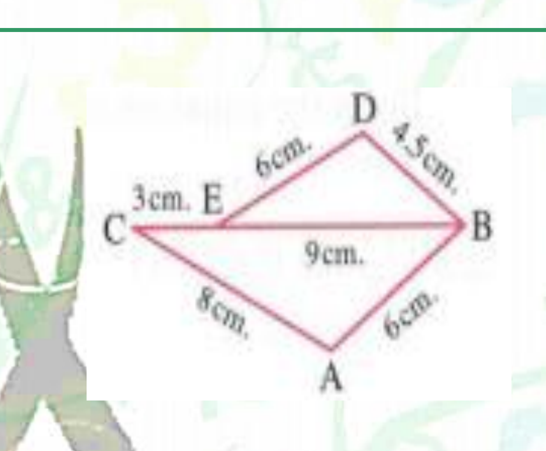
If $\overline{AD} // \overline{EF} // \overline{BC}$, AE = 4 cm.
EB = 6 cm. , DF = 2 cm.
,then the length of $\overline{CF}$ = …….. cm.



ⓐ 2	ⓑ 3
ⓒ 4	ⓓ 5

(176) **In the opposite figure :**

B , E and C are collinear.
If CE = 3 cm. , BE = 9 cm. , BD = 4.5 cm.
, DE = 6 cm. ,BA = 6 cm.
, AC = 8 cm., then the scale factor of the similarity of the two triangles ABC , DBE = ……..



ⓐ 4 : 3	ⓑ 3 : 4
ⓒ 16 : 9	ⓓ 9 : 16

(177) If tan (180° + 5 θ)+ tan (270° + 4 θ) = 0 then the value of θ which satisfies the equation where $\theta \in]\, 0 , \frac{\pi}{2} \,[$ equals……………..°

ⓐ 5	ⓑ 10	ⓒ 20	ⓓ 90

(178) If the sum of the measures of angles in any regular polygon 180° (n – 2) where n is the number of sides then the measure of an angle in regular hexagon in radian ………

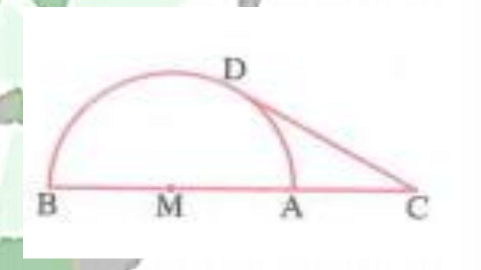
ⓐ $\frac{\pi}{3}$	ⓑ $\frac{3\pi}{4}$	ⓒ $\frac{2\pi}{3}$	ⓓ $\frac{\pi}{2}$

(179) The angle with measure $\frac{31\pi}{6}$ lies in the ………. quadrant.

ⓐ first	ⓑ second	ⓒ third	ⓓ fourth

(180) **In the opposite figure :**

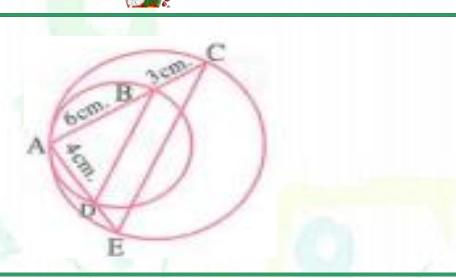
$\overline{CD}$ touches the semicircle M at D
If 2 CA = AB = 6 cm.
then CD = ………. cm.



ⓐ 6	ⓑ 3
ⓒ $3\sqrt{3}$	ⓓ 27

(181) In the opposite figure:
Two circles touching internally at A then ED = ……… cm.

ⓐ 2	ⓑ 3
ⓒ 3.5	ⓓ 4

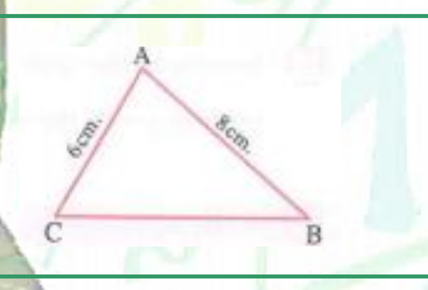


(182) If 2 cos = - $\sqrt{3}$, $\pi < \theta < \frac{3\pi}{2}$, then θ ………

ⓐ $\frac{\pi}{3}$	ⓑ $\frac{6\pi}{7}$	ⓒ $\frac{4\pi}{3}$	ⓓ $\frac{7\pi}{6}$

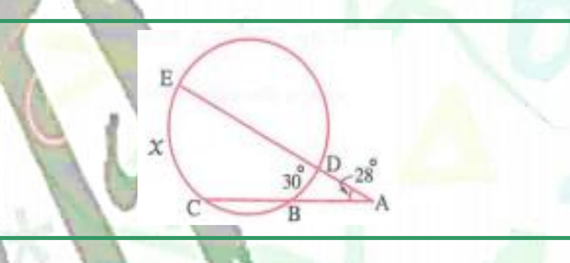
(183) In the opposite figure :
If m (∠ A) = 2 m (∠ B) , then BC = …… cm.

ⓐ $3\sqrt{10}$	ⓑ $2\sqrt{21}$
ⓒ 12	ⓓ 10



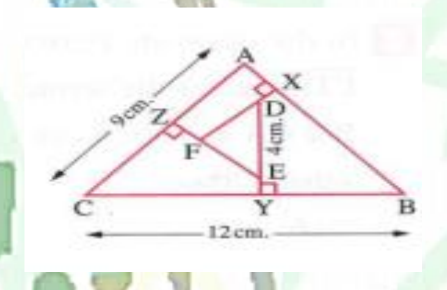
(184) In the opposite figure :
x = ………….

ⓐ 30°	ⓑ 60°
ⓒ 86°	ⓓ 26°



(185) In the opposite figure:
If $\overline{FX} \perp \overline{AB}$, $\overline{DY} \perp \overline{BC}$, $\overline{EZ} \perp \overline{AC}$, AC = 9 cm. , BC = 12 cm. , DE = 4 cm , then EF = ……….. cm.

ⓐ 2	ⓑ 3
ⓒ 5	ⓓ 6

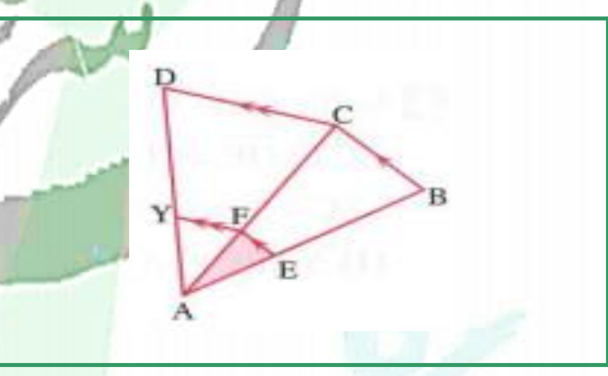


(186) Which of the following is factoring to the expression : $x^2 + 4$?

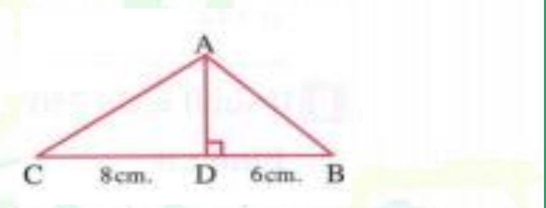
ⓐ $(x - 2) (x + 2)$	ⓑ $(x + 2)^2$
ⓒ $(x - 2 i)^2$	ⓓ $(x - 2 i) (x + 2 i)$

(187) In the opposite figure :
If the area of (polygon DYFC) = 40 cm^2 the area of (polygon FEBC) = 32 cm^2. ,then area of (Δ AFY) = 5 cm^2. ,then the area of (Δ AEF) = …….. cm^2

ⓐ 3	ⓑ 4
ⓒ 5	ⓓ 6

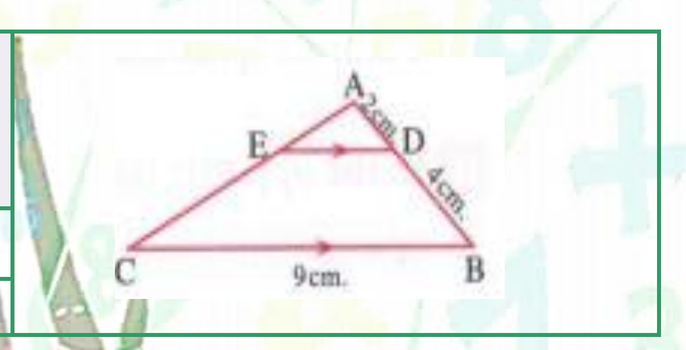


(188) In the opposite figure :
AB cos B + AC cos C = ……… cm



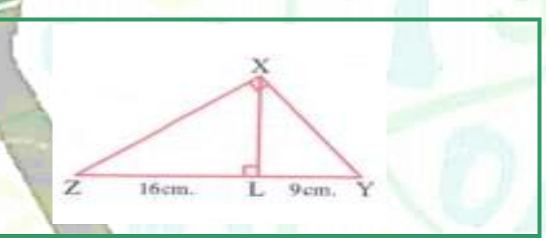
ⓐ 6	ⓑ 8
ⓒ 14	ⓓ 48

(189) In the opposite figure:
If the area of Δ ADE = 8 cm^2
, then the area of the figure.
DBCE = ……… cm^2



ⓐ 27	ⓑ 64
ⓒ 24	ⓓ 16

(190) In the opposite figure :
XL= ……… cm.

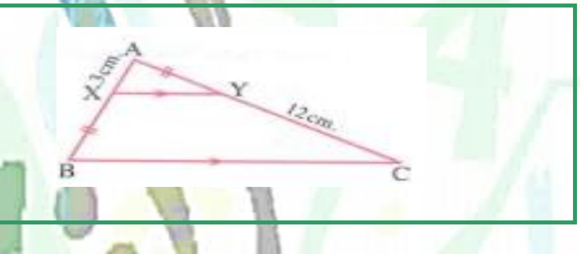


ⓐ 7	ⓑ 12
ⓒ 20	ⓓ 144

(191) The function $f : f(x) = 2x$ is positive in …………

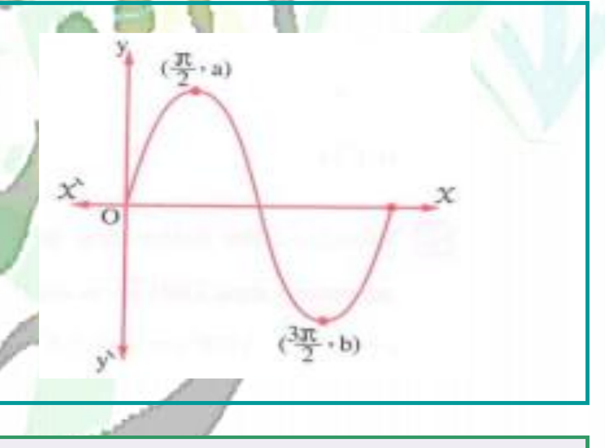
ⓐ ℝ	ⓑ $\mathbb{R}^+$	ⓒ  $\mathbb{R}^-$	ⓓ  ℝ - { 0 }

(192) In the opposite figure:
AC = ………… cm.



ⓐ 15	ⓑ 16
ⓒ 18	ⓓ 20

(193) The opposite figure:
show the curve y = sin x
, then | a | + | b | = …………



ⓐ 1
ⓑ 2
ⓒ π
ⓓ 2π

(194) The product of the roots of the equations :
$a x^2 + b x + C = 0$, $b x^2 + c x + a = 0$, $c x^2 + a x + b = 0$ equals ………..

ⓐ ABC	ⓑ - 1	ⓒ 1	ⓓ zero

(195) If $x + y\,i = i^{15} + 2\sqrt{-4}$, then $x + y = \dots\dots\dots\dots$

ⓐ 3	ⓑ 4	ⓒ zero	ⓓ -3

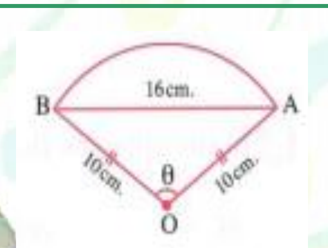
(196) If the two roots of the equation $x^2 + 4x + k = 0$ are distinct real then k ∈ ……..

ⓐ] - ∞ , 4 [	ⓑ] 4 , ∞ [	ⓒ] - ∞ , 4]	ⓓ { 4 }

(197) If AM = 12 cm. , r = 9 cm. where A is point outside circle M , then $P_M(A)$=

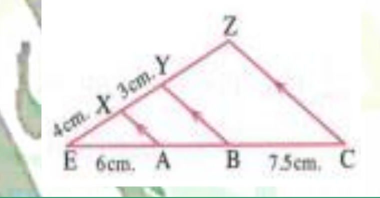
ⓐ 65	ⓑ 63	ⓒ 49	ⓓ 7

(198) In the opposite figure:
$\widehat{AB}$ is an are in a circle whose centre O
then find the length of $\widehat{AB} \simeq$ ……… cm



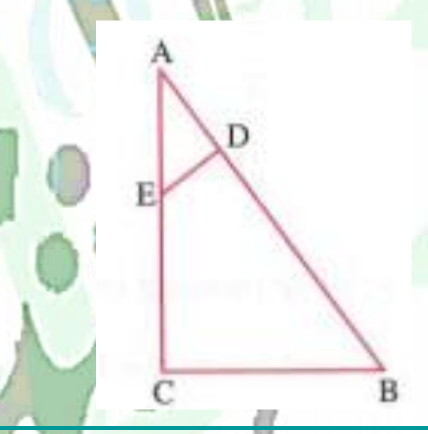
ⓐ 19	ⓑ 25
ⓒ 18	ⓓ 21

(199) In the opposite figure :
AB + YZ = ………. cm.



ⓐ 5	ⓑ 13
ⓒ 11	ⓓ 9.5

(200) Which of the following is not sufficient to prove that DBCE is a cyclic quadrilateral ?



ⓐ m (∠ ADE) = m (∠ C)

ⓑ Δ ADE ~ Δ ACB

ⓒ AD × DB = AE × EC

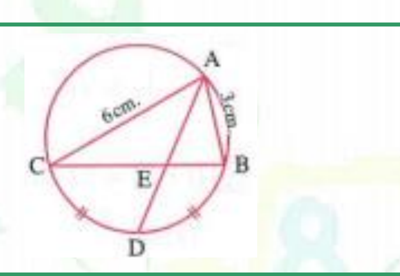
ⓓ AD × AB = AE × AC

(201) $(x + 2i)(x - 2i) = \dots\dots\dots$

ⓐ $x^2 + 4$	ⓑ $x^2 - 4$
ⓒ $4xi - 4$	ⓓ $x^2 - 4xi + 4$

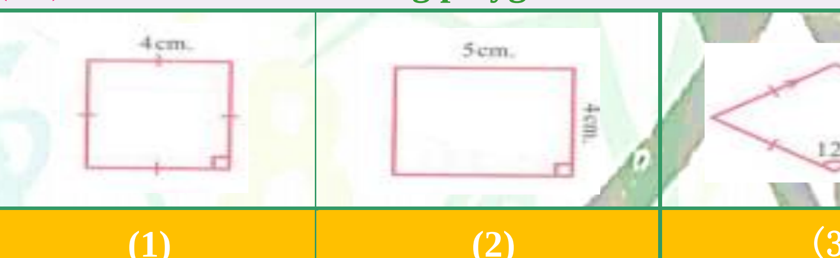
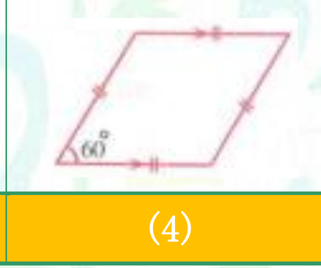
(202) The solution set of the equation $x^2 + 1 = 0$ in ℝ is ………..

ⓐ { 1 }	ⓑ { 1 , - 1 }	ⓒ ∅	ⓓ { - i , i }

(203) In the opposite figure : $\frac{BE}{BC} = \ldots\ldots\ldots$		
ⓐ $\frac{1}{2}$	ⓑ $\frac{1}{3}$	
ⓒ 2	ⓓ 3	

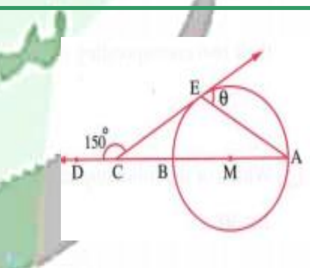
(204) If the ratio between the areas of two similar polygons is 16 : 25 , then the ratio between their two corresponding sides = ………..			
ⓐ 2 : 5	ⓑ 4 : 5	ⓒ 16 : 25	ⓓ 16 : 41

(205) Which of the following angles have both sine and cosine are negative ?			
ⓐ 30°	ⓑ 120°	ⓒ 220°	ⓓ 320°

(206) Which of the following polygons are similar?			
			
(1)	(2)	(3)	(4)
ⓐ The two polygons [1] , [2]		ⓑ The two polygons [1] , [3]	
ⓒ The two polygons [3] , [4]		ⓓ The two polygons [2] , [4]	

(207) If the terminal side of a positive angle (90° – θ°) in standard position intersects the unit circle at point $\left(\frac{-3}{5}, \frac{4}{5}\right)$ then sin (90° – θ°) = ………..			
ⓐ $\frac{-3}{5}$	ⓑ $\frac{3}{5}$	ⓒ $\frac{-4}{5}$	ⓓ $\frac{4}{5}$

(208) The function $f : f(x) = 4 - 2x$ is non-positive if ………….			
ⓐ $x > 2$	ⓑ $x < 2$	ⓒ $x \geq 2$	ⓓ $x \leq 2$

(209) In the opposite figure : If $\overrightarrow{CE}$ is a tangent ,then θ = …….		
ⓐ 45°	ⓑ 50°	
ⓒ 55°	ⓓ 60°	

(210) The measure of the central angle subtends an arc of length π cm. in a circle with diameter length 8 cm. equals …………

ⓐ $\frac{\pi}{8}$	ⓑ $\frac{\pi}{4}$	ⓒ $\frac{2\pi}{3}$	ⓓ 2π

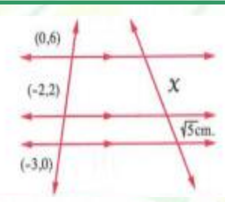
(211) The quadratic equation whose terms coefficients are real numbers and one of its roots is (3 – i) is ………

ⓐ $x^2 - 6x - 10 = 0$	ⓑ $2x^2 + 6x - 10 = 0$
ⓒ $x^2 - 6x + 10 = 0$	ⓓ $x^2 + 6x + 10 = 0$

(212) In the opposite figure :



x = ………… cm.



ⓐ $\sqrt{5}$	ⓑ $2\sqrt{5}$
ⓒ $3\sqrt{5}$	ⓓ $4\sqrt{5}$

(213) If $\cos\theta = \frac{3}{5}$, $0° < \theta < 90°$, then $\sin(90° - \theta)$ = …………

ⓐ $\frac{3}{4}$	ⓑ $\frac{5}{3}$	ⓒ $\frac{3}{5}$	ⓓ $\frac{4}{5}$

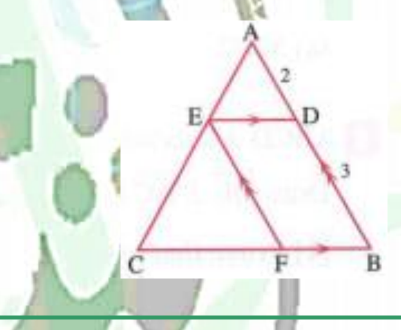
(214) The function $f : f(\theta) = \sin(b\theta)$ is periodic function and its period $\left(\frac{2\pi}{3}\right)$, then b = ………….

ⓐ $\frac{1}{2}$	ⓑ $\frac{1}{3}$	ⓒ 3	ⓓ 6

(215) In the opposite figure :

If $\overline{DE} \parallel \overline{BC}$, $\overline{EF} \parallel \overline{AB}$, $\frac{AD}{DB} = \frac{2}{3}$

,then $\frac{\text{area}(\square DBFE)}{\text{area}(\Delta ABC)}$ = ……….



ⓐ $\frac{21}{25}$	ⓑ $\frac{16}{25}$
ⓒ $\frac{12}{25}$	ⓓ $\frac{13}{25}$

(216) If $4x + 2yi = 8 + 4xi$, then $x + y$ = ………..

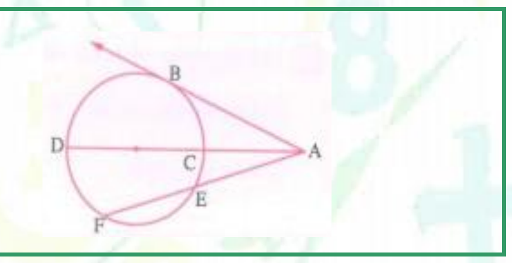
ⓐ -2	ⓑ 5	ⓒ 6	ⓓ 4

(217) If the ratio between the areas of two similar polygons is 16 : 25 , then the ratio between the lengths of two corresponding sides equals ………

ⓐ 2 : 5	ⓑ 4 : 5	ⓒ 16 : 25	ⓓ 16 : 41

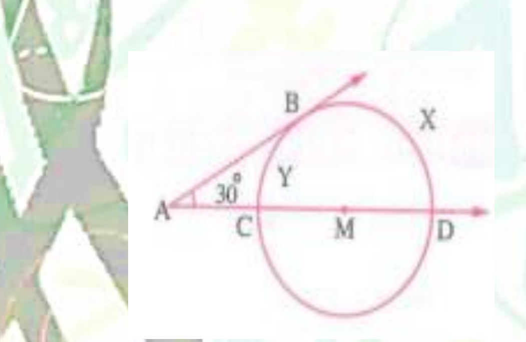
(218) If $x = 4$ is one of the roots of the equation $x^2 + m\,x = 4$, then.........	
ⓐ m = - 3	ⓑ m is uneven.
ⓒ (1 – m) is a perfect square.	ⓓ (a) , (c) are true.

(219) In the opposite figure :
$x^2 \times y^2 = $ ……….



ⓐ 30° × 180°	ⓑ 180° × 60°
ⓒ 60°	ⓓ 150°

(220) In the opposite figure: All the following mathematical expressions are true except ……..

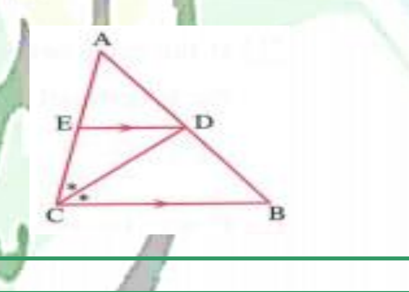


ⓐ $(AB)^2 = AC \times AD$
ⓑ $(AB)^2 = AE \times AF$
ⓒ $AC \times AD = AE \times AF$
ⓓ $AC \times CD = AE \times EF$

(221) The sum of integers belong to the solution set of the inequality $(x - 2)(3x - 1) \leq 0$ equal			
ⓐ - 1	ⓑ 1	ⓒ 2	ⓓ 3

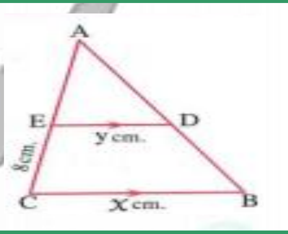
(222) If A , - A are the measures of two equivalent angles then one of the values of A ……			
ⓐ 150°	ⓑ 90°	ⓒ 180°	ⓓ 270°

(223) In the opposite figure :
$\frac{AE}{EC} = $ …….



ⓐ $\frac{DE}{BC}$	ⓑ $\frac{AD}{AB}$
ⓒ $\frac{AC}{CB}$	ⓓ $\frac{AB}{BC}$

(224) In the opposite figure :
If $\frac{x-y}{x+y} = \frac{2}{7}$, then AE = ……. cm.



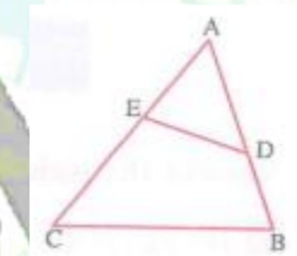
ⓐ 16	ⓑ 15
ⓒ 12	ⓓ 10

(225) The diameter of circle M is 6 cm. , P_M (B) zero then B lies …………	
ⓐ inside the circle.	ⓑ outside the circle.
ⓒ on the circle.	ⓓ at the centre of the circle.

(226) If (L – 2) , (M – 2) are roots of the equation : $x^2 - 4x - 4 = 0$, then $L^2 - 8L + 5 =$ …………..			
ⓐ 3	ⓑ - 3	ⓒ ± 3	ⓓ zero

(227) The sum of the areas of two similar polygons is 225 cm^2 und the ratio between their perimeters 4 : 3 then the area of the greater polygons = ………… $cm.^2$			
ⓐ 81	ⓑ 144	ⓒ $128\frac{4}{7}$	ⓓ $96\frac{3}{7}$

(228) In the opposite figure : Δ ABC ~ Δ AED If AD = 3 cm , BD = 2cm. , AE = 2.5 cm. then EC = ………. cm.	
ⓐ 2.5	ⓑ 3
ⓒ 4.5	ⓓ 3.5



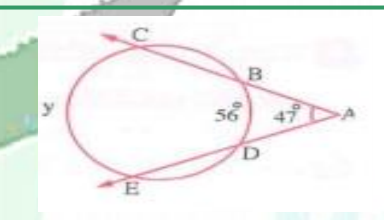
(229) The function f where $f(x) = 2 - x$ is non-negative when $x \in$ …………			
ⓐ] - ∞, 2]	ⓑ] - ∞ , 2 [	ⓒ [2 , ∞ [	ⓓ] 2 , ∞[

(230) $\tan\left(-\frac{14}{3}\pi\right) =$ …………..			
ⓐ $-\sqrt{3}$	ⓑ $\sqrt{3}$	ⓒ $\frac{1}{\sqrt{3}}$	ⓓ $\frac{-1}{\sqrt{3}}$

(231) If P_M (A) = r , then A lies ……… "where r is the radius length of the circle M"	
ⓐ on the circle	ⓑ outside the circle
ⓒ inside the circle	ⓓ at the centre of the circle

(232) If sin A = $\frac{1}{2}$, then the least positive angle satisfies this trigonometric equation is …..			
ⓐ 150°	ⓑ 30°	ⓒ 60°	ⓓ 330°

(233) In the opposite figure: y = …………	
ⓐ 90°	ⓑ 140°
ⓒ 150°	ⓓ 160°

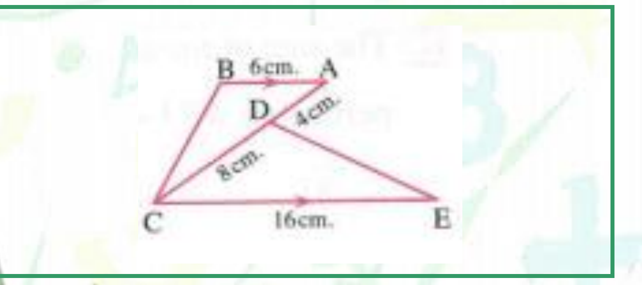


(234) The sign of the function f where $f(x) = 6 - 2X$ is positive if ……

ⓐ $x > 3$ ⓑ $x \geq 3$ ⓒ $x < 3$ ⓓ $x = 3$

(235) In the opposite figure :

If $\overline{AB} \parallel \overline{EC}$, then $\frac{ED}{BC} = $ ………..



ⓐ $\frac{4}{3}$ ⓑ $\frac{3}{4}$

ⓒ $\frac{2}{3}$ ⓓ $\frac{1}{2}$

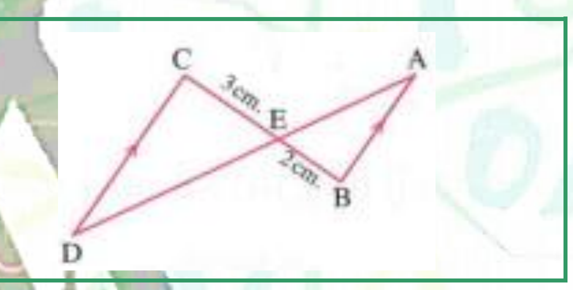
(236) If cot (90° – θ) cot 2 θ where 0° < θ < 90° ,then sin 3 θ …………

ⓐ - 1 ⓑ zero ⓒ 1 ⓓ $\frac{1}{2}$

(237) In the opposite figure :

$\overline{AB} \parallel \overline{CD}$, BE = 2 cm. , CE = 3 cm ,

AD = 10 cm., then AE = ………… cm.

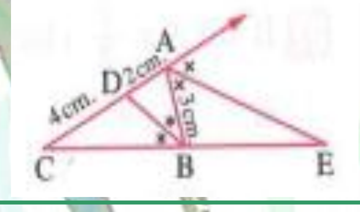


ⓐ 4 ⓑ 6

ⓒ 2 ⓓ 3

(239) In the opposite figure:

BE = ……… cm.



ⓐ 6 ⓑ 8

ⓒ 9 ⓓ 10

(240) cos (90° – θ) × csc θ = ………



ⓐ zero ⓑ 1 ⓒ - 1 ⓓ cot θ

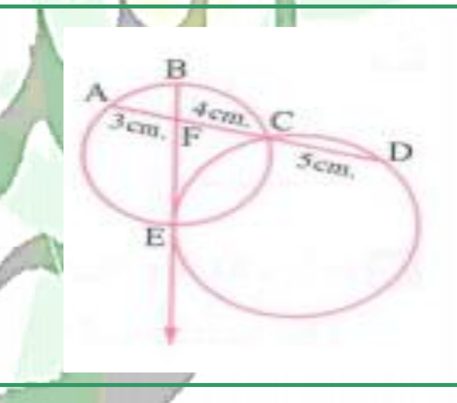
(241) In the opposite figure:

Two intersecting circles at C , E

$\overrightarrow{BE}$ touches the larger circle at E

If AF =3 cm. , FC = 4 cm. ,

CD = 5 cm. ,then BE = ………. cm.



ⓐ 9 ⓑ 8

ⓒ 7 ⓓ 6

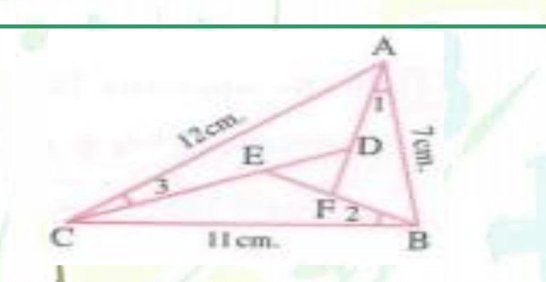
(242) the terminal side of an angle of measure 30° in standard position rotates three and half revolutions clockwise then the terminal side lies in the …… quadrant

ⓐ first ⓑ second ⓒ third ⓓ fourth

(243) The number of intersections between the curve $y = \sin 3x$ with x-axis in the interval $[0, 2\pi]$ equals ………..

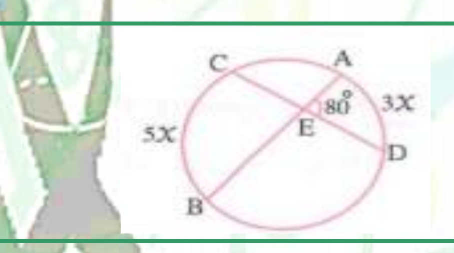
ⓐ 2	ⓑ 3	ⓒ 4	ⓓ 7

(244) In the opposite figure :
If $m(\angle 1) = m(\angle 2) = m(\angle 3)$
,then DE : EF : FD = …………..



ⓐ 7 : 11 : 12	ⓑ 12 : 11 : 7
ⓒ 12 : 7 : 11	ⓓ 11 : 12 : 7

(245) In the opposite figure :
x = ………….



ⓐ 10°	ⓑ 20°
ⓒ 30°	ⓓ 40°

(246) If $\sec 3\theta = 2$ where θ is an acute angle , then θ = ………….

ⓐ 10°	ⓑ 15°	ⓒ 20°	ⓓ 30°

(247) The simplest form of the imaginary number i^{-18} = ………..

ⓐ 1	ⓑ - 1	ⓒ - i	ⓓ i

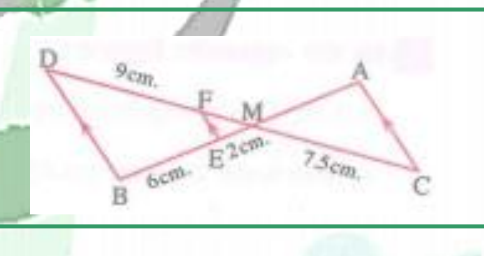
(248) In the opposite figure :
If $\overline{DE} \parallel \overline{BC}$ and the area
of (Δ EBC) = 9 cm^2
,then the area of (Δ ADE) = ……. cm^2

ⓐ 6	ⓑ 12
ⓒ 18	ⓓ 27

(249) The measure of an inscribed angle is 60° subtended by an arc of length 4π cm.
, then the circumference of the circle = …………. cm.

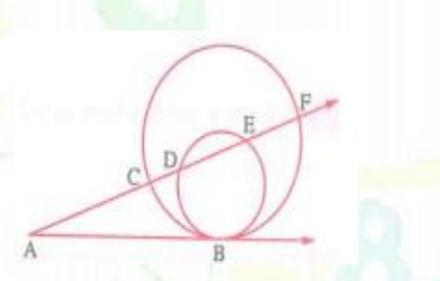
ⓐ 24π	ⓑ 12π	ⓒ 6π	ⓓ 18π

(250) In the opposite figure :
MF + AM = ………. cm.



ⓐ 11	ⓑ 7.5
ⓒ 6	ⓓ 8

(251) In the opposite figure : $\overrightarrow{AB}$ is a common tangent to the two circles at B , $(AB)^2$ = ………….	
ⓐ AC × CD	ⓑ AD × AE
ⓒ AD × DF	ⓓ AC × CF



(252) The simplest form of the expression: tan (360° – θ) + cot (270° – θ) is ……			
ⓐ 0	ⓑ 2	ⓒ - 2 tan θ	ⓓ 2 cot θ

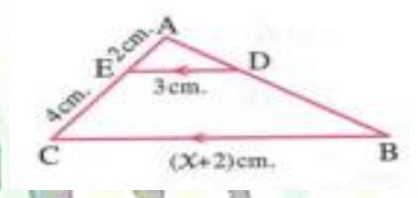
(253) If the roots of the equation : 4 x^2 – 12 x + m = 0 are equal , then m = ………..			
ⓐ 3	ⓑ 4	ⓒ 9	ⓓ 16

(254) The sign of f : f (x) = - 2 x is positive in the interval …………			
ⓐ ℝ	ⓑ ℝ - { 2 }	ⓒ] - ∞ , 2]	ⓓ] - ∞ , 0 [

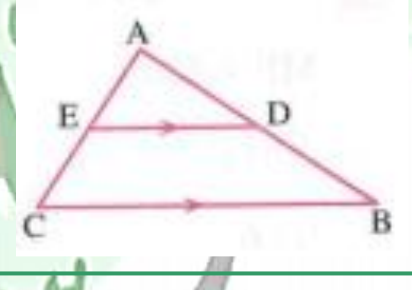
(255) The measure of the angle between the interior and exterior bisectors of an angle at any vertex in a triangle equal …………			
ⓐ $\frac{\pi}{4}$	ⓑ $\frac{\pi}{6}$	ⓒ $\frac{\pi}{2}$	ⓓ $\frac{3\pi}{2}$

(256) In the opposite figure : x = ………….	
ⓐ 5	ⓑ 6
ⓒ 7	ⓓ 8





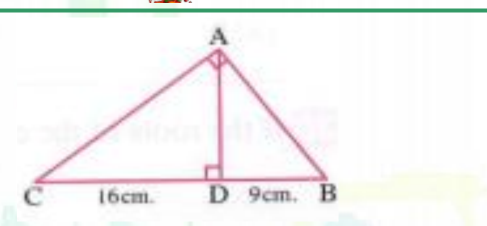
(257) In the opposite figure : All the following mathematical expressions are true except ……….	
ⓐ $\frac{AD}{DB} = \frac{AE}{EC}$	ⓑ $\frac{AD}{DB} = \frac{DE}{BC}$
ⓒ $\frac{AD}{AB} = \frac{AE}{AC}$	ⓓ $\frac{AB}{BD} = \frac{AC}{EC}$



(258) If sin ∝ = cos , β wher ∝, B are two acute angles ,then tan (∝ + β) = ………			
ⓐ $\frac{1}{\sqrt{3}}$	ⓑ 1	ⓒ $\sqrt{3}$	ⓓ undefined

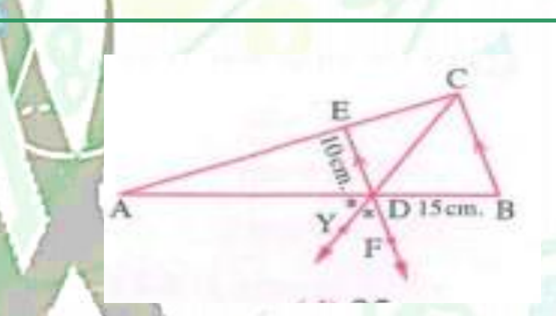
(259) The smallest value of the function f where f (θ) = 3 cos (2 θ) is ……….			
ⓐ - 6	ⓑ - 3	ⓒ - 2	ⓓ - 1

(260) In the opposite figure : The length of $\overline{AB}$ = ……… cm.	
ⓐ 12	ⓑ 15
ⓒ 20	ⓓ 25



(261) The equation whose roots (2 + 3 i) + (2 – 3 i) is ……….	
ⓐ $x^2 + 4x + 13 = 0$	ⓑ $x^2 - 4x + 13 = 0$
ⓒ $x^2 - 4x - 13 = 0$	ⓓ $x^2 + 4x - 13 = 0$

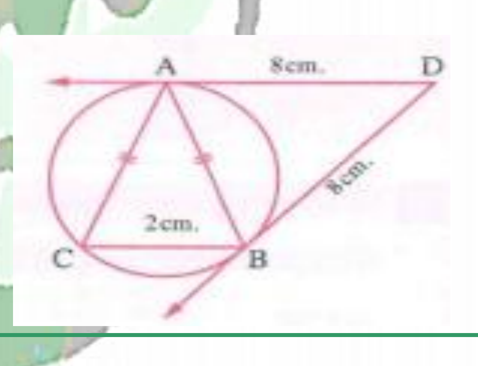
(262) In the opposite figure : If $\overline{ED}$ // $\overline{BC}$, m (∠ ADY) = m (∠ FDY) and ED = 10 cm. , BD = 15 cm. , then AD = ………. cm.	
ⓐ 20	ⓑ 15
ⓒ 30	ⓓ 25



(263) $(1 - i)^{12}$ = …………			
ⓐ - 64 i	ⓑ 64 i	ⓒ - 64	ⓓ 64

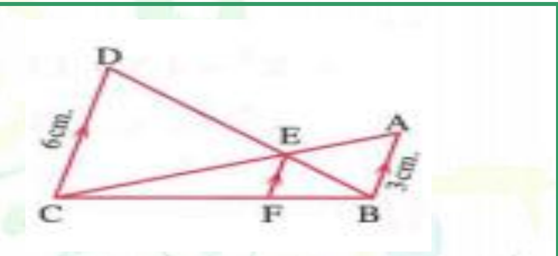
(264) If the scale factor of similarity of the polygon P_1 to the polygon P_2 is $\frac{2}{3}$ and scale factor of similarity of the polygon P_3 to the polygon P_2 is $\frac{1}{3}$ which of the following relations is correct ?
ⓐ Area (P_1) + Area (P_2) = Area (P_3)
ⓑ Area (P_1) + Area (P_3) = Area (P_2)
ⓒ $\sqrt{Area\ (P_1)} + \sqrt{Area\ (P_2)} = \sqrt{Area\ (P_3)}$
ⓓ $\sqrt{Area\ (P_1)} + \sqrt{Area\ (P_3)} = \sqrt{Area\ (P_2)}$

(265) In the opposite figure: If $\overrightarrow{DA}$, $\overrightarrow{DB}$ are tangents to the circle at A and B respectively DA = DB = 8 cm. , BC = 2 cm. , then AC = ………… cm.	
ⓐ 3	ⓑ 4
ⓒ 5	ⓓ 6

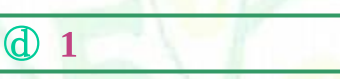


(266) The maximum value of the function g where g (x) = 4 sin θ is …………			
ⓐ 1	ⓑ 2	ⓒ - 4	ⓓ 4

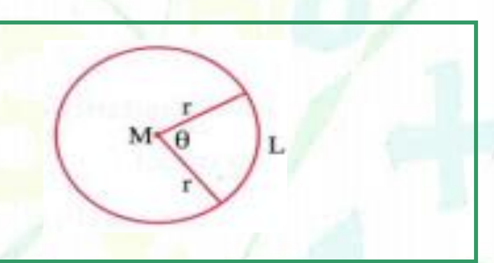
(267) In the opposite figure :
If $\overline{AB}$ // $\overline{EF}$ // $\overline{CD}$
,then EF = ………… cm.



ⓐ 2.5	ⓑ 2
ⓒ 1.5	ⓓ 1

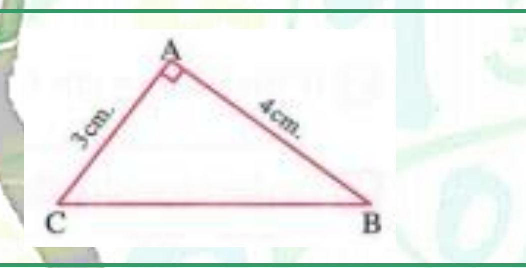


(268) In the opposite figure :
θ^{red} = ………….



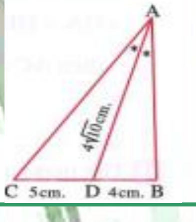
ⓐ $\frac{L}{r}$	ⓑ $\frac{r}{L}$
ⓒ r × L	ⓓ L × 2 r

(269) In the opposite figure:
m (∠ ABC) = ………



ⓐ $\sin^{-1}\left(\frac{3}{4}\right)$	ⓑ $\sin^{-1}\left(\frac{4}{3}\right)$
ⓒ $\tan^{-1}\left(\frac{3}{4}\right)$	ⓓ $\cot^{-1}\left(\frac{3}{4}\right)$

(270) in the opposite figure :
The perimeter of Δ ABC = …….. cm.

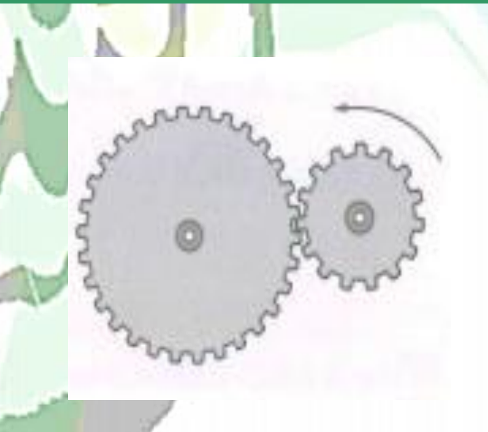


ⓐ 36	ⓑ 32
ⓒ 28	ⓓ 24

(271) The roots of the equation : $x^2 - 2\sqrt{5}\,x + 1 = 0$ are ………

ⓐ rational real	ⓑ not real
ⓒ real equal	ⓓ irrational real

(272) In the opposite figure :
If the greater gear revolves one revolution
, then the smaller gear revolves 3 revolution
If the smaller gear revolves one revolution
in the direction of the arrow shown on the
figure then the central angle of revolving the
greater gear is …………



ⓐ $-\frac{\pi}{2}$	ⓑ $\frac{-2\pi}{3}$
ⓒ $\frac{2\pi}{3}$	ⓓ 2π

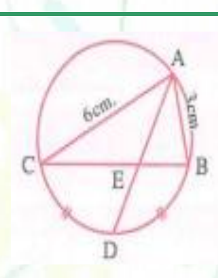
(273) The sign of the function $f : f(x) = x - 4$ where $x \in]4, \infty[$ is ……….

ⓐ positive	ⓑ negative
ⓒ zero	ⓓ negative and positive together

(274) In the opposite figure :



$\frac{BE}{BC} =$ ………..



ⓐ $\frac{1}{3}$	ⓑ $\frac{1}{2}$
ⓒ $\frac{2}{3}$	ⓓ $\frac{3}{2}$

(275) The ratio between the length of two corresponding sides of two similar triangles is 1 : 4 then the ratio between their areas is ……….

ⓐ 1 : 2	ⓑ 1 : 4	ⓒ 1 : 8	ⓓ 1 : 16

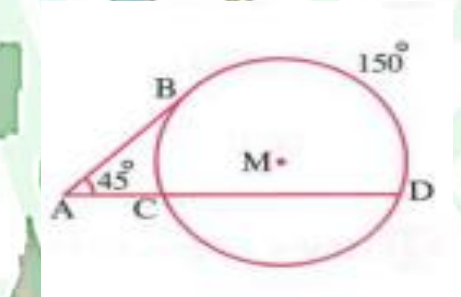
(276) If L , M are the two roots of the equation $a x^2 + b x + c = 0$ where $a > 0$, $L < M$, then the solution set of the inequality $a x^2 + b x + c < 0$ is ……..

ⓐ $]-\infty, L[$	ⓑ $]L, M[$	ⓒ $]M, \infty[$	ⓓ $\mathbb{R} - [L, M]$

(277) If one of the roots of the equation : $4k x^2 + 7x + k^2 + 4 = 0$ is multiplicative inverse of the other root then k ……….

ⓐ ± 2	ⓑ 3	ⓒ 4	ⓓ 2

(278) In the opposite figure:
$\overline{AB}$ is a tangent segment to circle M at B $\overrightarrow{AC}$ intersects the circle at C , D $m(\angle A) = 45°$, $(\widehat{DB}) = 150°$,then $m(\widehat{BC}) =$ ………..

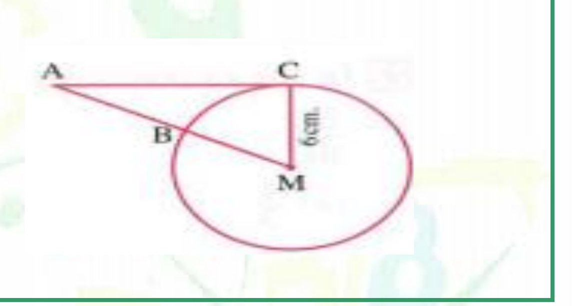


ⓐ 30°	ⓑ 40°
ⓒ 60°	ⓓ 120°

(279) In Δ ABC , AB = 8 cm. , AC = 6 cm. D ∈ $\overline{AB}$ such that AD = 3 cm. E ∈ $\overline{AC}$ such that AE = 4 cm. If the area of Δ AED = 3 cm^2. , then the area of the polygon DBCE = ……….. cm^2

ⓐ 12	ⓑ 9	ⓒ 6	ⓓ 8

(280) In the opposite figure :
$\overline{AC}$ touches the circle M at C ,
MC = 6 cm. P_M (A) = 64
,then AB = ………. cm.



ⓐ 3	ⓑ 4
ⓒ 5	ⓓ 6

(281) If Δ ABC ~ Δ XYZ and 3 AB = 2 XY , then area of Δ ABC : area of Δ XYZ = …

ⓐ 4 : 9	ⓑ 9 : 4	ⓒ 2 : 3	ⓓ 3 : 2

(282) The angle of measure $\left(\frac{7\pi}{6}\right)$ radian has degree measure = ………..

ⓐ 225°	ⓑ 210°	ⓒ 840°	ⓓ - 225°

(283) $(1 + i)^{10}$ = ……….

ⓐ 32 i	ⓑ - 32 i	ⓒ 32	ⓓ - 32

(284) The function f: $f(\theta) = 2 \sin 4\theta$ is a periodic function and in period is ……

ⓐ 2π	ⓑ π	ⓒ $\frac{\pi}{2}$	ⓓ $\frac{\pi}{4}$

(285) If a = $5 + \sqrt{3}$ i + b = $5 - \sqrt{3}$ i , then a b = ………….

ⓐ 28	ⓑ 25	ⓒ 21	ⓓ 7

(286) If 3 + 2 i is one of the roots of the equation : $x^2 - 6x + k = 0$, $k \in \mathbb{R}$, then the other root = ………..

ⓐ 3 + i	ⓑ 5 - i	ⓒ 3 + i	ⓓ 3 + 2 i

(287) If one of the roots of the equation : $x^2 + (k - 2)x + 5 = 0$ is the additive inverse of the other, then k = ……….

ⓐ 1	ⓑ 2	ⓒ 5	ⓓ - 2

(288) If Land M are the roots of the equation : $x^2 - 6x + 2 = 0$, then the quadratic equation whose roots are : L + 2 , M + 2 is ………..

ⓐ $x^2 - 2x + 16 = 0$	ⓑ $x^2 - 9x + 16 = 0$
ⓒ $x^2 - x - 16 = 0$	ⓓ $x^2 - 10x + 18 = 0$

(289) If Land M are the roots of the equation : $x^2 - 6x + 2 = 0$, then $L^2 - 6L$ = ……

ⓐ 2	ⓑ - 2	ⓒ 4	ⓓ 3

(290) Sign of the function $f : f(x) = 2 - x$ is positive in the interval ………			
ⓐ] 2 , ∞ [	ⓑ] – 2 , ∞ [	ⓒ] - ∞ , 2 [	ⓓ] 0 , ∞ [

(291) S.S. of the inequality : $9 - \chi^2 \geq 0$ is …………			
ⓐ] – 3 , 3 [	ⓑ [- 3 , 3]	ⓒ ℝ -] – 3 , 3]	ⓓ ℝ - [– 3 , 3]

(292) The radian measure of the central angle opposite to an are of length 6 cm. in a circle of diameter length 12 cm. is ……….			
ⓐ $\left(\frac{1}{2}\right)^{red}$	ⓑ $(1)^{red}$	ⓒ $(3)^{red}$	ⓓ $(\pi)^{red}$

(293) If point A ($\frac{1}{2}$, y) is the intersection point of the terminal side of the angle θ in the standard position with the unit circle, where $\theta \in] 0 , \frac{\pi}{2} [$, then y = ………			
ⓐ $\frac{\sqrt{3}}{2}$	ⓑ $\frac{2}{\sqrt{3}}$	ⓒ $\frac{3}{\sqrt{3}}$	ⓓ $\sqrt{\frac{3}{2}}$

(294) If sin x = -1 , cos x = 0 , then x = …………			
ⓐ $\frac{\pi}{2}$	ⓑ π	ⓒ $\frac{3\pi}{2}$	ⓓ 2

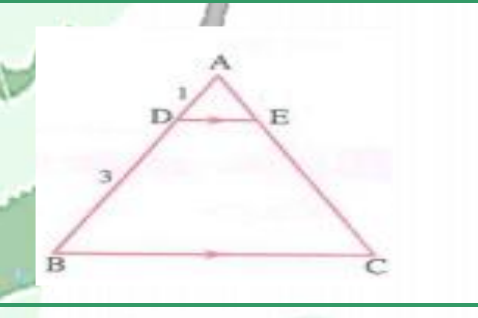
(295) Range of the function f where $f(\theta) = \frac{1}{2} \sin 3\theta$ is …………			
ⓐ $[-\frac{1}{2} , \frac{1}{2}]$	ⓑ [- 2 , 2]	ⓒ $[-\frac{3}{2} , \frac{3}{2}]$	ⓓ [- 3 , 3]

(296) If $\sin \theta = \frac{3}{5}$, θ is positive acute angles then value of : sin (180° - θ) sin (90° + θ) = ……..			
ⓐ $\frac{12}{25}$	ⓑ $-\frac{12}{25}$	ⓒ $\frac{9}{25}$	ⓓ $\frac{16}{25}$

(297) If sin 3 θ = cos 6 θ , θ° < 0 < 90° then θ = …………			
ⓐ 10°	ⓑ 15°	ⓒ 20°	ⓓ 25°

(298) In the opposite figure :
$\overline{DE} \parallel \overline{BC}$, AD : DB = 1 : 3 , area of A ADE = 4 cm^2 then area of the trapezium BDEC = …… cm^2.

ⓐ 60	ⓑ 16
ⓒ 32	ⓓ 36

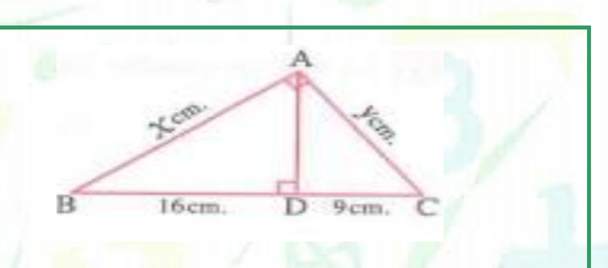


(299) If $\cos \propto = \frac{-3}{5}$, $90° < \propto < 180°$, $5\sin\propto + 3\tan\propto = ……$

ⓐ 0	ⓑ 1	ⓒ - 1	ⓓ 2

(300) In the opposite figure :
$\frac{y}{x}$ = ……….

ⓐ 1	ⓑ $\frac{4}{3}$
ⓒ $\frac{3}{4}$	ⓓ 2

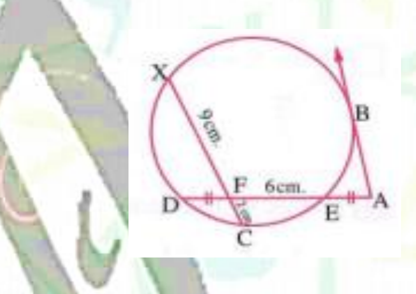


(301) The ratio between perimeter of two similar polygons is 4 : 9 then the ratio between their areas is ………..

ⓐ 4 : 9	ⓑ 9 : 4	ⓒ 16 : 81	ⓓ 2 : 3

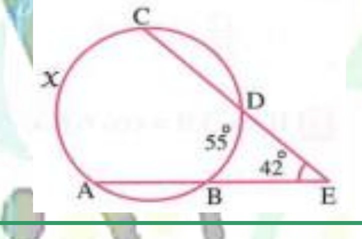
(302) In the opposite figure :
$\overrightarrow{AB}$ is a tangent to the circle at B
AE = FD , EF = 6 cm. , CF = 2 cm.
XF = 9 cm, then AB = ………. cm.

ⓐ 3	ⓑ 6
ⓒ 9	ⓓ 12



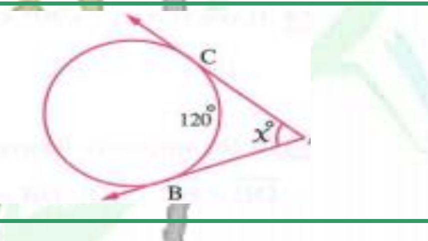
(303) In the opposite figure:
x = ……….. °

ⓐ 140	ⓑ 139
ⓒ 141	ⓓ 142



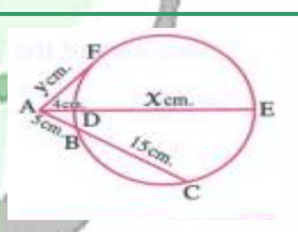
(304) In the opposite figure:
x = ……….. °

ⓐ 60	ⓑ 100
ⓒ 120	ⓓ 50

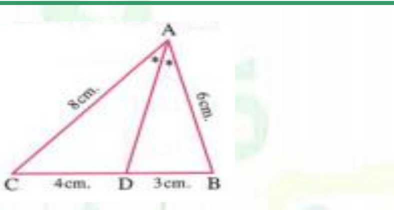


(305) In the opposite figure:
x + y = ……….. cm.

ⓐ 9	ⓑ 18
ⓒ 22	ⓓ 31

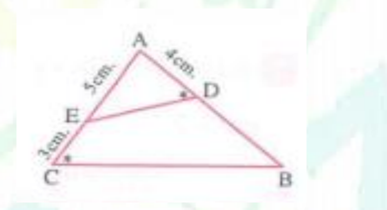


(306) In the opposite figure: AD = ……….. cm.	
ⓐ $\sqrt{60}$	ⓑ 6
ⓒ 7	ⓓ $\sqrt{12}$

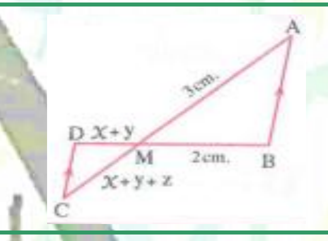


(307) If AM = 12 cm. , r = 9 cm. , A lies outside the circle M , then P_M (A) = ………			
ⓐ 65	ⓑ 63	ⓒ 49	ⓓ 7

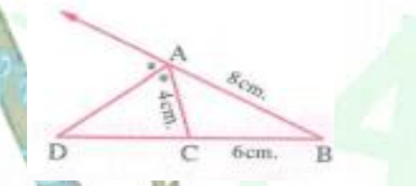
(308) In the opposite figure: DC = ……….. cm.	
ⓐ 2	ⓑ 6
ⓒ 4	ⓓ 7



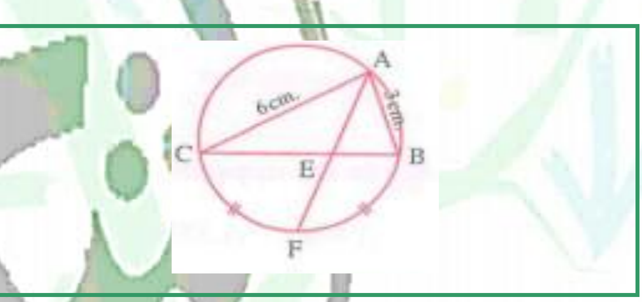
(309) In the opposite figure : $\overline{AB}$ // $\overline{CD}$, then z = ………	
ⓐ $\frac{x-y}{2}$	ⓑ $\frac{x+y}{2}$
ⓒ $5x + 5y$	ⓓ $\frac{x+y}{5}$



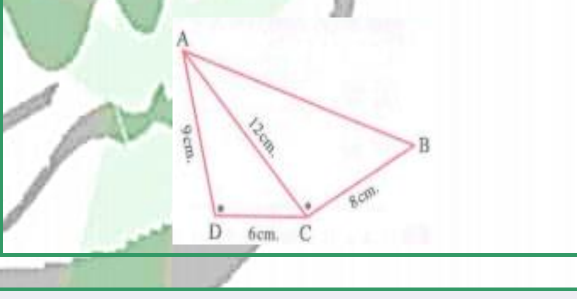
(310) In the opposite figure : DC = …….. cm.	
ⓐ 2	ⓑ 6
ⓒ 4	ⓓ 8



(311) In the opposite figure : $\frac{BE}{EC}$ = …………	
ⓐ $\frac{1}{2}$	ⓑ $\frac{1}{3}$
ⓒ $\frac{3}{4}$	ⓓ $\frac{3}{5}$



(312) In the opposite figure m (∠ ADC) = m (∠ ACB) ,then AB = ………. cm.	
ⓐ 12	ⓑ 16
ⓒ 18	ⓓ 20



(313) If $(y - 4)^2 = 36$, y < 0 , then y + 4 = …………			
ⓐ - 2	ⓑ 2	ⓒ 10	ⓓ 14

(314) The are of length 5 π cm. in a circle with radius length 15 cm. is opposite to central angle of measure ……… °

ⓐ 30	ⓑ 60	ⓒ 90	ⓓ 180

(315) The common root between the two quadratic equations : $x^2 - 3x + 2 = 0$ and $2x^2 - 5x + 2 = 0$ is ……………

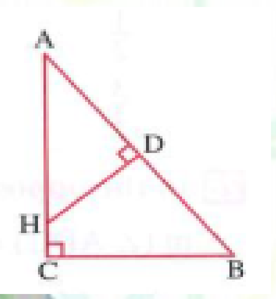
ⓐ $\frac{1}{2}$	ⓑ - 2	ⓒ 1	ⓓ 2

(316) If k is the similarity factor of polygon P_1 to polygon P_2 and $0 < k < 1$ then the polygon P_1 is ………. to polygon P_2

ⓐ congruent	ⓑ an enlargement	ⓒ a shrinking	ⓓ twice the area

(317) In the opposite figure :
$\Delta ABC \sim \Delta AHD$ and if $m(\angle B) = 3x + 10°$ and $m(\angle AHD) = x + 30°$
then $m(\angle A) =$ ……… °

ⓐ 50	ⓑ 40
ⓒ 30	ⓓ 60



(318) If A + B = 90° and $\tan A = \frac{1}{3}$, then tan B = ………..

ⓐ $\frac{1}{3}$	ⓑ $\frac{2}{3}$	ⓒ 1	ⓓ 3

(319) The conjugate of the number $(2 + i)^{-1}$ is ………..

ⓐ 2 + i	ⓑ 2 - i	ⓒ $\frac{2-i}{5}$	ⓓ $\frac{2+i}{5}$

(320) A piece of land of the shape of rectangle its dimensions are 6m. , 9 m. If we want to double its area by increasing each of the two dimensions by the same value then the added value equals …… m.

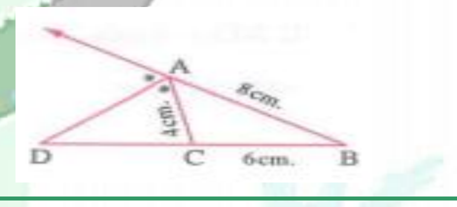
ⓐ 3	ⓑ 5	ⓒ 7	ⓓ 9

(321) If the two roots of the equation : $a x^2 + b = 0$ are real and different , then …

ⓐ a b > 0	ⓑ a = 0	ⓒ a > 0 , b > 0	ⓓ a b < 0

(322) In the opposite figure:
DC = ………. cm.

ⓐ 2	ⓑ 4
ⓒ 6	ⓓ 8

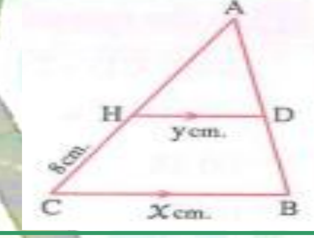


(323) If the lengths of two corresponding sides of two similar triangles are 7 cm. , 11 cm. , then the ratio between their perimeters is			
ⓐ $\frac{49}{121}$	ⓑ $\frac{7}{18}$	ⓒ $\frac{7}{11}$	ⓓ $\frac{11}{18}$

(324) The product of the roots of the equations : a x^2 + b x + c = 0 , b x^2 + c x + a = 0 , c x^2 + a x + b = 0 equals			
ⓐ abc	ⓑ - 1	ⓒ 1	ⓓ zero

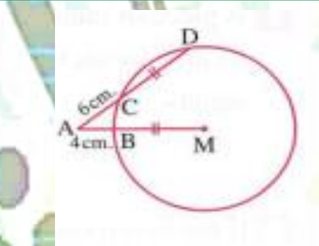
(325) If L , L^2 are the roots of the equation : 2 x^2 + b x + 54 = 0 then b = ...			
ⓐ - 12	ⓑ - 24	ⓒ 6	ⓓ 9

(326) In the opposite figure : If $\frac{x-y}{x+y} = \frac{2}{7}$, then AH = ... cm.	
ⓐ 16	ⓑ 15
ⓒ 12	ⓓ 10

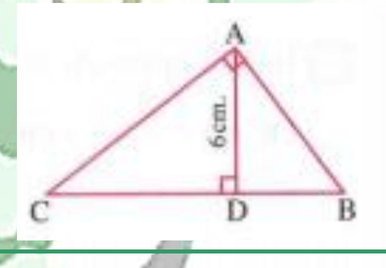


(327) The string length of a simple pendulum is 14 cm. swings in an angle of measure $\frac{\pi}{10}$ then its are length = ... cm.			
ⓐ 4.4	ⓑ 4.6	ⓒ 4.8	ⓓ 4.9

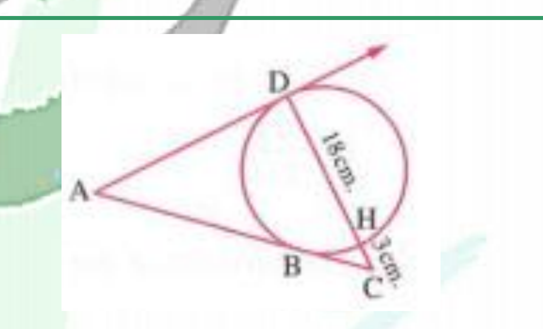
(328) In the opposite figure : If CD = BM then the circumference of the circle M = ... cm.	
ⓐ 15 π	ⓑ 18 π
ⓒ 20 π	ⓓ 24 π



(329) In the opposite figure : If AD = 6 cm. , tan B + tan C = $\frac{5}{3}$,then BC = ... cm.	
ⓐ 6	ⓑ 8
ⓒ 10	ⓓ 14



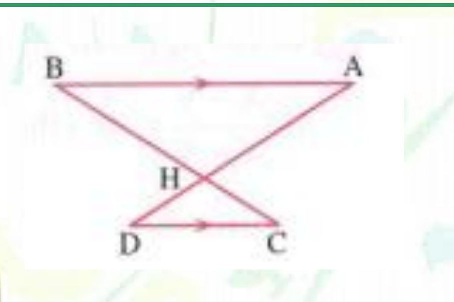
(330) In the opposite figure : $\overrightarrow{AD}$, $\overrightarrow{AB}$ two tangents at D , B $\overrightarrow{CH}$ cuts the circle at H , D if CH = 3 cm , HD = 18 cm , then AC – AD = ... cm.	
ⓐ $\sqrt{7}$	ⓑ $2\sqrt{7}$
ⓒ $3\sqrt{7}$	ⓓ $6\sqrt{7}$



(331) If ABCD is a cyclic quadrilateral and in A = $\frac{3}{5}$, then sin C = …………

ⓐ $\frac{3}{5}$	ⓑ $\frac{-3}{5}$	ⓒ $\frac{4}{5}$	ⓓ $\frac{-4}{5}$

(332) In the opposite figure :
$\overline{AB}$ // $\overline{CD}$, 2AH = 3 HD ,
BH – CH = 4 cm.
then BC = ………. cm.

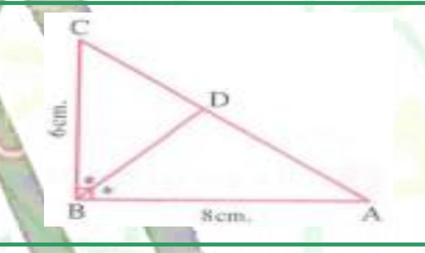


ⓐ 18	ⓑ 20
ⓒ 24	ⓓ 25

(333) Which of the following functions is positive for all values of $x \in \mathbb{R}$ ……….

ⓐ $f : f(x) = x^2 + 4$	ⓑ $f : f(x) = (x - 1)^2 + 9$
ⓒ $f : f(x) = 3$	ⓓ all of (a) , (b) , (c)

(334) In the opposite figure :
AD = ………. cm.



ⓐ $5\frac{5}{7}$	ⓑ $6\frac{3}{4}$
ⓒ 5	ⓓ $\frac{4}{3}$

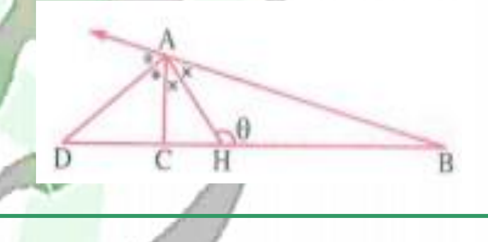
(335) The solution set of the inequality : $-x(x+2) \geq 0$ in $\mathbb{R}$ is ……….

ⓐ { 0 , - 2 }	ⓑ [- 2 , 0]	ⓒ] – 2 , 0 [	ⓓ [- 2 , 2]

(336) If the terminal side of the angle θ in the standard position intersects the unit circle at the point $\left(\frac{-\sqrt{3}}{2}, y\right)$ where $y \in \mathbb{R}^+$, then θ = ……….

ⓐ 30°	ⓑ 150°	ⓒ 210°	ⓓ 330°

(337) In the opposite figure :
AD = 8 cm. , AH = 6 cm. ,then tan θ =..



ⓐ $\frac{-4}{3}$	ⓑ $\frac{-3}{4}$
ⓒ $\frac{3}{4}$	ⓓ $\frac{4}{3}$

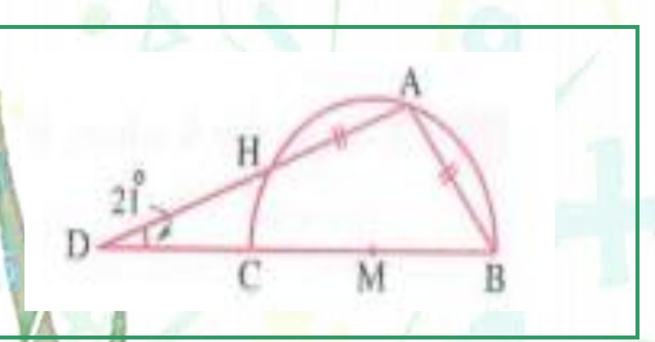
(338) If M is a circle with diameter length 12 cm , A is a point in its plane and the power of the point A with respect to the circle M equals 13 cm.
then MA = …… cm.

ⓐ 7	ⓑ 14	ⓒ 3.5	ⓓ 6

(339) A is a point in the plane of circle M and MA = 6 cm. and P_M (A) = -13 , ,then the area of the circle M = ……. cm^2. , $\left(\pi = \frac{22}{7}\right)$			
ⓐ 154	ⓑ 44	ⓒ 144	ⓓ 7

(340) In the opposite figure :
$\overline{BC}$ is a diameter in circle,
m (∠ D) = 21°
AB = AH , then (∠ A) = ……..

ⓐ 100°	ⓑ 104°
ⓒ 106°	ⓓ 110°

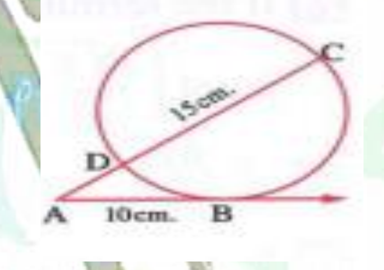


(341) If the polygon ABCD ~ polygon XYZI , then AB × ZL = XY ×……….			
ⓐ ZL	ⓑ AC	ⓒ BC	ⓓ CD

(342) The simplest form of the imaginary number i^{-43} = ……			
ⓐ i	ⓑ - i	ⓒ 1	ⓓ - 1

(343) In the opposite figure :
If $\overline{AB}$ is a tangent to the circle at B , DC = 15 cm. , AB =10 cm.
,then the length of $\overline{AC}$ = …….. cm.

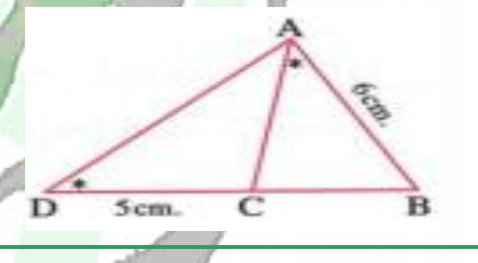
ⓐ 4	ⓑ 6
ⓒ 20	ⓓ 5



(344) If sin 2 θ = cos 3 θ , 0° < θ < 90° , then θ equals …………			
ⓐ 60°	ⓑ 45°	ⓒ 30°	ⓓ 18°

(345) In the opposite figure :
If m (∠ BAC) = m (∠ D) AB = 6 cm.
DC = 5 cm. , then BC = ……… cm.

ⓐ 6	ⓑ 9
ⓒ 10	ⓓ 4



(346) If the distance between a point and the centre of a circle equals 10 cm. and the power of this point with respect to the circle equals 64 , then the radius length of this circle equals ……… cm.			
ⓐ 8	ⓑ 6	ⓒ 7	ⓓ 9

(347) If $\theta = \sin^{-1} 0.6$ where θ is the measure of the smallest positive angle , then θ =			
ⓐ 36° 52`	ⓑ 52° 36`	ⓒ 120° 33`	ⓓ 40° 15`

(348) The simplest form of the expression : cos (180° - θ) + sin (90° + θ) = ……….			
ⓐ zero	ⓑ 2	ⓒ 2 cos θ	ⓓ 2 sin θ

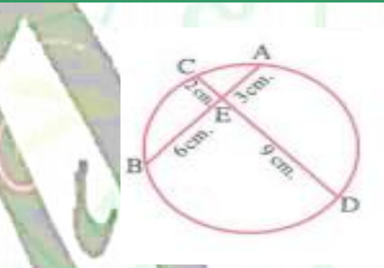


(349) The angle whose measure is (- 850°) lies in the ……… quadrant.			
ⓐ first	ⓑ second	ⓒ third	ⓓ fourth

(350) In a circle of diameter length 24 cm. the length of the are subtended by a central angle of measure 30° equals ………… cm.			
ⓐ 2 π	ⓑ 3 π	ⓒ 4 π	ⓓ π

(351) In the opposite figure :
If $\overline{AB} \cap \overline{CD}$ = { E } , AE = 3 cm. ,
CE = 2 cm. , BE = 6 cm.
, then ED = ……. cm.

ⓐ 9	ⓑ 8
ⓒ 7	ⓓ 6



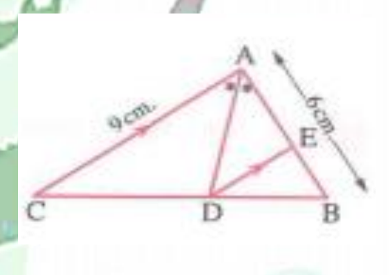
(352) If $x = 3$ is one of the two roots of the equation : $x^2 - m\,x = 3$, then m = ……..			
ⓐ - 1	ⓑ - 2	ⓒ 2	ⓓ 1

(353) If M is a circle of radius length 3 cm. , A is a point lies in its plane where MA = 5 cm. then P_M (A) = …………			
ⓐ 3	ⓑ 4	ⓒ 5	ⓓ 16

(354) The solution set of the inequality : $x\,(x + 3) < 0$ in ℝ is ………..			
ⓐ { 0 , -3 }	ⓑ] – 3 , 2]	ⓒ [- 3 , 0 [	ⓓ] – 3 , 0 [

(355) In the opposite figure :
$\overrightarrow{AD}$ bisects ∠ BAC , $\overline{ED}$ // $\overline{AC}$,
AC = 9 cm. AB = 6 cm ,
then AE = ……… cm.

ⓐ 3.6	ⓑ 2.4
ⓒ 3.2	ⓓ 5



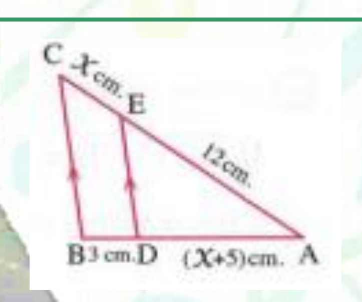
(356) If the two roots of the equation : $x^2 - 4x + k = 0$ are equal, then k = ……….			
ⓐ 1	ⓑ 4	ⓒ 8	ⓓ 9

(357) The function f where $f(x) = (x - 1)(x + 3)$ is negative in the interval ……..			
ⓐ] – 3 , 1 [	ⓑ] – 1 , 3 [	ⓒ [- 3 , - 1]	ⓓ] – 3 , 3]

(358) The solution set of the equation $x^2 = 5x$ in ℝ is ………..			
ⓐ { 0 , 5 }	ⓑ { 5 }	ⓒ { 0 }	ⓓ { 1 , 5 }

(359) In the opposite figure :
If $\overline{DE} \parallel \overline{BC}$, EA = 12 cm. , BD = 3 cm.
DA = (x + 5) cm. , CB = x cm.
then the value of x = ………. cm.

ⓐ 2	ⓑ 3
ⓒ 6	ⓓ 4

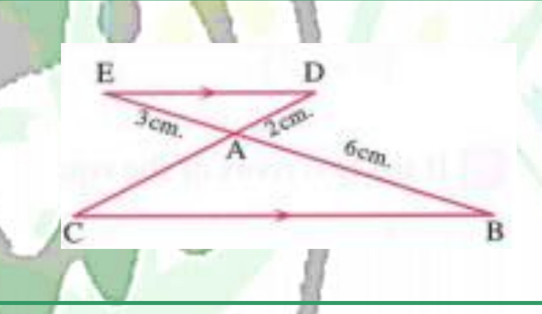


(360) If one of the two roots of the equation : $x^2 - (b - 3)x + 5 = 0$ is the additive inverse of the other root , then b = …………			
ⓐ - 5	ⓑ - 3	ⓒ 3	ⓓ 5

(361) If $a + bi = \frac{2+i}{2-i}$, then $a^2 + b^2$ = ……………			
ⓐ 1	ⓑ - 1	ⓒ 2	ⓓ - i

(362) In the opposite figure :
If $\overline{DE} \parallel \overline{BC}$, $\overline{DC} \cap \overline{BE}$ = {A} ,
AE = 3 cm., AB = 6 cm. , AD = 2 cm. ,
then CD = ………. cm.

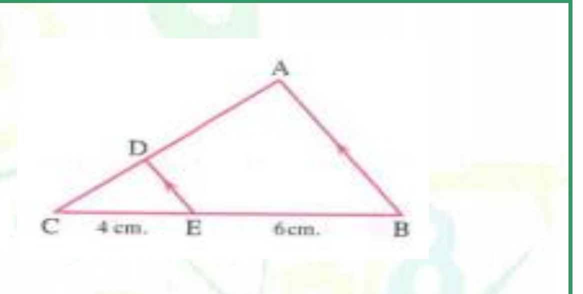
ⓐ 6	ⓑ 4
ⓒ 3	ⓓ 5



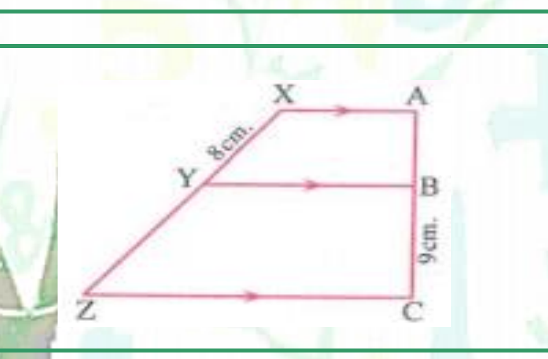
(363) If L and M are two roots of the equation : $x^2 - 5x + 6 = 0$, then the equation whose roots are L – M , M – L is …………			
ⓐ $x^2 + 1 = 0$	ⓑ $x^2 - 1 = 0$	ⓒ $x^2 + 25 = 0$	ⓓ $x^2 - x = 0$



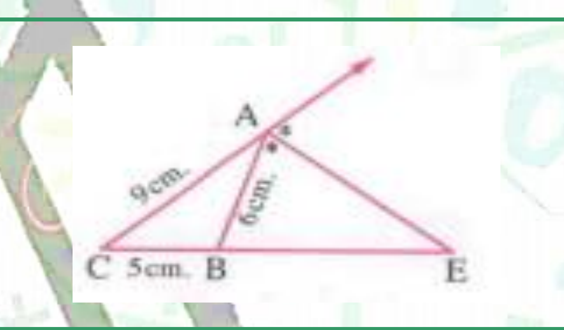
(364) In the opposite figure : If $\overline{ED}$ // $\overline{BA}$, BE = 6 cm. , EC = 4 cm. , the area of the figure ABED = 42 cm^2 then the area of Δ CED = ……… cm^2	
ⓐ 16	ⓑ 10
ⓒ 8	ⓓ 20



(365) In the opposite figure : If $\overline{AX}$ // $\overline{BY}$ // $\overline{CZ}$, YZ = 2 AB , BC = 9 cm. XY = 8 cm. , then AB = ……… cm.	
ⓐ 5	ⓑ 6
ⓒ 10	ⓓ 4

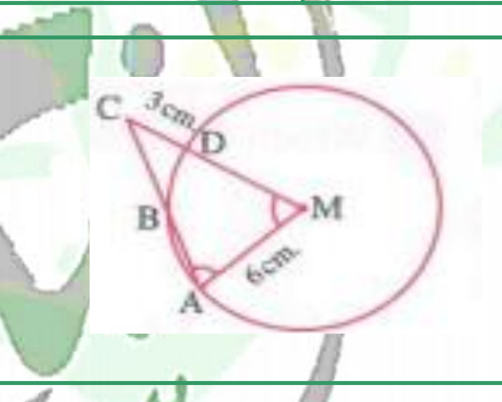


(366) In the opposite figure : If BC = 5 cm. , CA = 9 cm. , $\overrightarrow{AE}$ bisects the exterior angle. at A , AB = 6 cm. , then BE = ……… cm.	
ⓐ 8	ⓑ 10
ⓒ 6	ⓓ 7



(367) If the ratio between the perimeters of two similar triangles is 1 : 4 then the ratio between their two surface areas equals ………			
ⓐ 1 : 2	ⓑ 1 : 4	ⓒ 1 : 8	ⓓ 1 : 16

(368) In the opposite figure : If the length of the radius of a circle of center M is 6 = cm. , CD = 3 cm. , m (∠A) = m (∠M) , AM = 6 cm. , then CB = ……….. cm.	
ⓐ 3	ⓑ 4
ⓒ 5	ⓓ 6



(369) $(\sqrt{2} + i)^4 \, (\sqrt{2} - i)^4 =$ ………….			
ⓐ 81	ⓑ 9	ⓒ 81 i	ⓓ 9 i

(370) If one of the two roots of the equation : $2k x^2 + (k+3)x + 5 = 0$ is the multiplicative inverse of the other roots then k = ……….			
ⓐ 2	ⓑ 5	ⓒ $\frac{5}{2}$	ⓓ $\frac{-5}{2}$

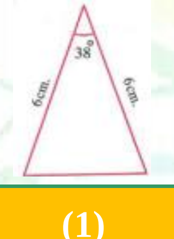
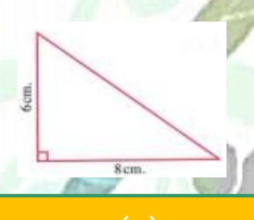
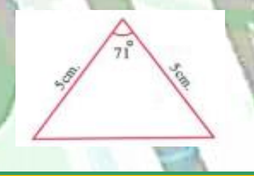
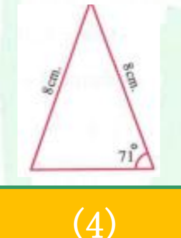
(371) If one of the two roots of the equation : $x^2 - 9x + c = 0$ is twice the other root then c = ………….			
ⓐ 9	ⓑ - 9	ⓒ 18	ⓓ - 18

(372) The function $f : f(x) = -1$ is negative in the interval ……….			
ⓐ] 1 , ∞ [	ⓑ] - ∞ , 1 [	ⓒ] – 1 , 1 [	ⓓ] - ∞ , ∞ [

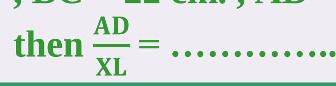
(373) The solution set of the inequality : $x^2 \geq 4x + 21$ in ℝ is ………….			
ⓐ [- 3 , 7]	ⓑ ℝ -] – 3 , 7 [	ⓒ ℝ - { – 3 , 7 }	ⓓ { 7 }

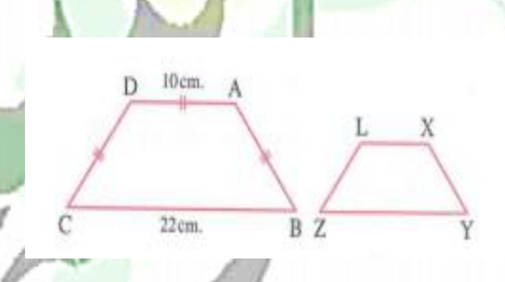
(374) If 5 and (3) are the two roots of the equation : $x^2 + bx + c$, then c = ……….			
ⓐ - 2	ⓑ 2	ⓒ 15	ⓓ - 15

(375) If the sum of the two roots of the equation : $ax^2 + bx + c = 0$ equal the product of its the roots, then c = ………..			
ⓐ - a	ⓑ - b	ⓒ a	ⓓ b

(376) Which two triangles of the following are similar?			
			
(1)	(2)	(3)	(4)
ⓐ ΔΔ (1) , (2)	ⓑ ΔΔ (2) , (3)	ⓒ ΔΔ (3) , (4)	ⓓ ΔΔ (1) , (4)

(377) In the opposite figure :
If ABCD ~ XYZL , the perimeter of the figure XYZL = 26 cm. , AD = 10 cm. , BC = 22 cm. , AB = AD = DC ,
then $\frac{AD}{XL}$ = ………….



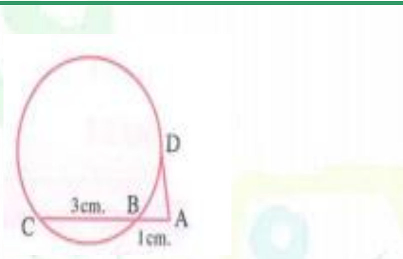


ⓐ 1 : 2	ⓑ 2 : 3
ⓒ 3 : 4	ⓓ 2 : 1

(378) Which of the sets of the following are similar ?			
ⓐ triangles	ⓑ squares	ⓒ rectangles	ⓓ parallelograms

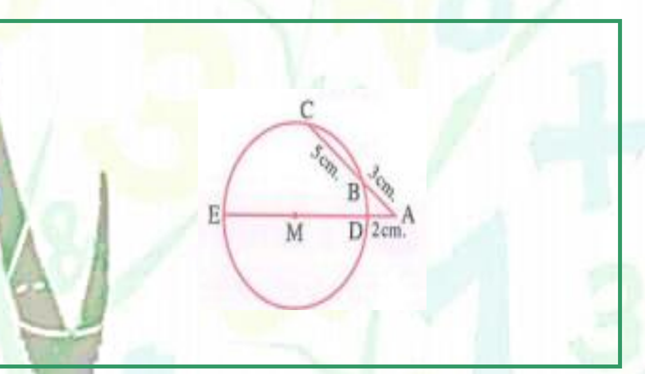
(379) In the opposite figure :
AB = 1 cm. , BC = 3 cm.
then AD = …….. cm.

ⓐ 2	ⓑ 4
ⓒ 3	ⓓ 8



(380) In the opposite figure :
If M is the center of the circle
AB = 3 cm. , BC = 5 cm. AD = 2 cm. ,
then the radius length of the circle
= …… cm.

ⓐ 7.5	ⓑ 6
ⓒ 12	ⓓ 5

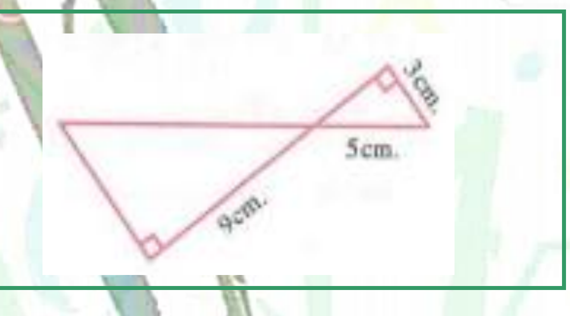


(381) The ratio between the length of diameters of two circles is 3 : 5 if the area of greater circle = 75 cm^2 then the area of smaller circle = ………. cm^2

ⓐ 81	ⓑ 27	ⓒ 25	ⓓ 125

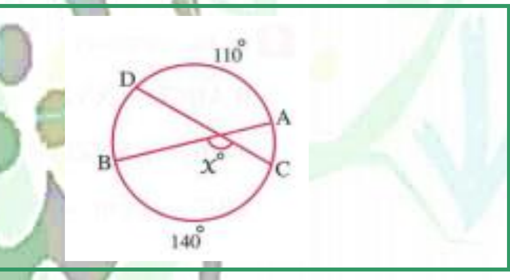
(382) In the opposite figure :
$\frac{\text{The area of the smaller triangle}}{\text{The area of the greater triangle}}$ = …………

ⓐ $\frac{25}{81}$	ⓑ $\frac{1}{3}$
ⓒ $\frac{16}{81}$	ⓓ $\frac{9}{64}$



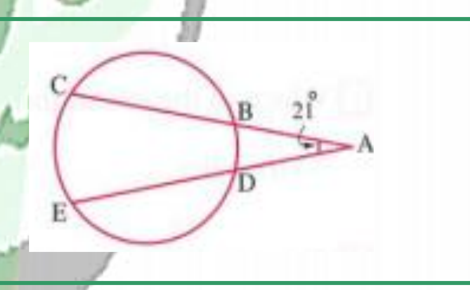
(383) In the opposite figure :
If m ($\widehat{AD}$) = 110° , m ($\widehat{BC}$) = 140°
then X = ………… °

ⓐ 120	ⓑ 170
ⓒ 130	ⓓ 125

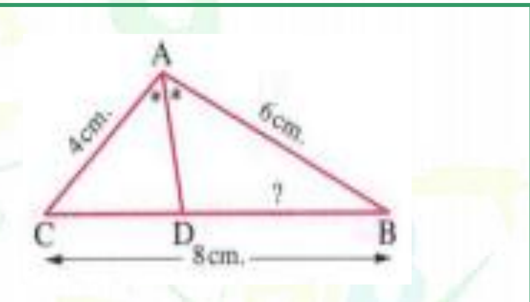


(384) In the opposite figure :
m (∠A) = 21° ,
then m ($\widehat{CE}$) - m ($\widehat{BD}$) = ………. °

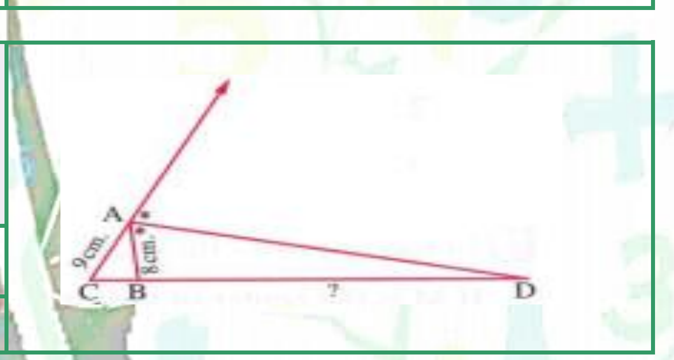
ⓐ 41	ⓑ 21
ⓒ 42	ⓓ 44



(385) In the opposite figure : $\overrightarrow{AD}$ bisects ∠ BAC , AB = 6 cm. , AC = 4 cm. BC = 8 cm. , then BD = ……… cm.	
ⓐ 4.8	ⓑ 8.4
ⓒ 3.2	ⓓ 5

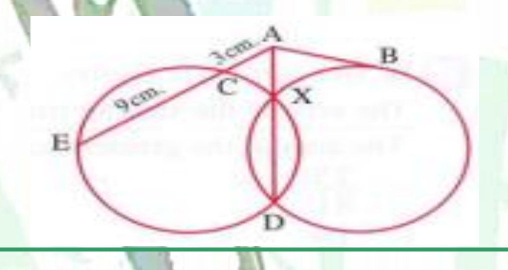


(386) In the opposite figure : $\overrightarrow{AD}$ bisects the exterior angle at A , AB = 8 cm. AC = 9 cm. , BC = 5 cm. , then BD = ……. cm.	
ⓐ 40	ⓑ 15
ⓒ 17	ⓓ 4



(387) If C is a point in the plane of the circle M and P_M (C) = - 8 , then the point C lies …	
ⓐ one the circle	ⓑ inside the circle
ⓒ outside the circle	ⓓ on the center of the circle

(388) In the opposite figure : If AC = 3 cm. , CE = 9 cm. then AB = ………… cm.	
ⓐ 6	ⓑ 8
ⓒ 12	ⓓ 27



(389) Two similar rectangles the length of the first is three times its width if the length of the second 12 cm. then its width = ………..			
ⓐ 2	ⓑ 3	ⓒ 4	ⓓ 6

(390) The angle whose measure is 120° in the standard position is equivalent to the angle of measure …………			
ⓐ 420°	ⓑ 240°	ⓒ - 300°	ⓓ - 240°

(391) The angle whose measure is $\frac{-8\pi}{3}$ lies in the quadrant.			
ⓐfirst	ⓑ second	ⓒ third	ⓓ fourth

(392) The degree measure of the angle of measure $\frac{7\pi}{6}$ is ………….			
ⓐ 105°	ⓑ 210°	ⓒ 420°	ⓓ 840°

(393) The are which its length 5 π cm. in a circle of a radius length 15 cm. is opposite a central angle of measure …………			
ⓐ 30°	ⓑ 60°	ⓒ 90°	ⓓ 180°

(394) If sin (θ + 10°) = $\frac{1}{2}$ where $\theta \in$] 0° , $\frac{\pi}{2}$ [,then m (∠ θ) = ………..			
ⓐ 20°	ⓑ 60°	ⓒ 90°	ⓓ 180°

(395) cos (- 30°) = ……….			
ⓐ $-\sqrt{3}$	ⓑ $-\frac{\sqrt{3}}{2}$	ⓒ $\frac{2}{\sqrt{3}}$	ⓓ $\frac{\sqrt{3}}{2}$

(396) If esc (θ + 20°) sec (3 θ + 30°) where 0° < θ < 90° , then cos 6 θ = ………..			
ⓐ $\frac{\sqrt{3}}{2}$	ⓑ $\frac{1}{\sqrt{3}}$	ⓒ $\frac{2}{\sqrt{3}}$	ⓓ $\frac{1}{2}$

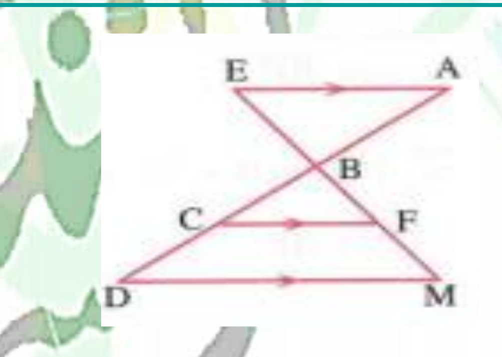
(397) If the power of a point A with respect to the circle M is a negative quantity then A lies ……….. the circle.			
ⓐ inside	ⓑ outside	ⓒ on	ⓓ on the center of

(398) The dimensions of a rectangle are 10 cm. , 6 cm. if the scale factor equals 3 then the perimeter of another of rectangle similar to it = ………… cm.			
ⓐ 96	ⓑ 69	ⓒ 15	ⓓ 30

(399) If f (θ) = cos 6θ , then the range of the function is …………			
ⓐ [- 1 , 1]	ⓑ [1 , 6]	ⓒ [- 6 , 6]	ⓓ] – 1 , 1 [

(400) the opposite figure :
AB : BC : CD = ……….

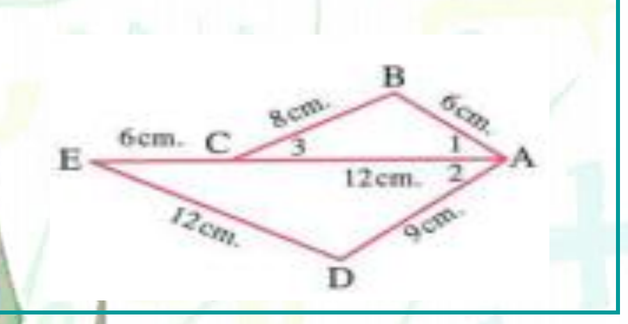
ⓐ AE : FC : MD
ⓑ EB : BF : FM
ⓒ EB : EF : EM
ⓓ EB : BC : CD



(401) If the function f: $f(x) = x^2 + bx + c$ and a < 0 and the two roots of the equation $f(x) = 0$ are 2 , - 5 , then the function f is positive in……….			
ⓐ { - 5 , 2 }	ⓑ ℝ -] – 5 , 2 [	ⓒ] – 5 , 2 [	ⓓ [– 5 , 2]

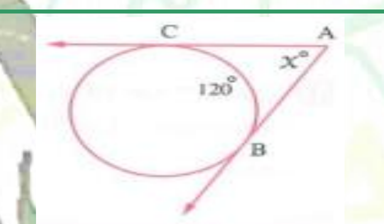
(402) The exterior bisector of the vertex of isosceles triangle is ………. to the base.			
ⓐ perpendicular	ⓑ bisects	ⓒ parallel	ⓓ equal

(402) In the opposite figure :
ⓐ m (∠1) = m (∠2)
ⓑ m (∠2) = m (∠B)
ⓒ m (∠B) = m (∠E)
ⓓ m (∠3) = m (∠2)



(405) The polygon ABCD ~ the polygon XYZL , if AB = 4 cm. , BC = 8 cm. , XY = (k + 2) cm. ,YZ (3 k + 1) cm. , then k = ……… cm.			
ⓐ 6	ⓑ 3	ⓒ 5	ⓓ 8

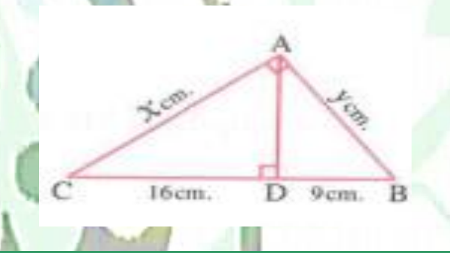
(406) In the opposite figure : If m ($\widehat{BC}$) = 120° , then x = …….. °	
ⓐ 80	ⓑ 60
ⓒ 240	ⓓ 120



(407) The conjugate of the number (3 + $\sqrt{-4}$) is ……….			
ⓐ - 3 – 2 i	ⓑ 3 + 2 i	ⓒ 3 – 2 i	ⓓ - 3 + 2 i

(408) In the opposite figure : $\frac{y}{x}$ = …….	
ⓐ $\frac{4}{3}$	ⓑ $\frac{3}{4}$
ⓒ $\frac{16}{9}$	ⓓ $\frac{9}{16}$





(409) The sign of f : f (x) = x is negative at ……….			
ⓐ x > - 1	ⓑ x < - 1	ⓒ x > 0	ⓓ x < 0

(410) are the two roots of the equation : $x^2 + x$ + b = 0 , then (a + b) = ………			
ⓐ (2 , 3)	ⓑ (5 , 6)	ⓒ (- 5 , - 6)	ⓓ (- 5 , 6)

(411) If L and M are the two roots of the equation : $x^2 - 4x + 2 = 0$ where L > M , then the numerical value of ($L^2 + M^2$) = ………			
ⓐ 15	ⓑ 12	ⓒ 9	ⓓ 16

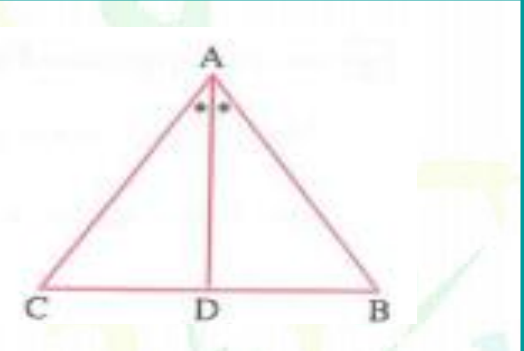
(412) In the opposite figure :
The length of $\overline{AD}$ = ……….

ⓐ  $\sqrt{AB \times AC - BD \times DC}$

ⓑ $(AB)^2 + (AC)^2$ -BD × DC

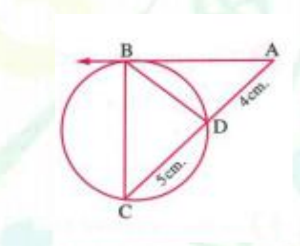
ⓒ AB + AC – BD × DC

ⓓ $\sqrt{AB \times AC + BD \times DC}$



(413) In the opposite figure :
$\overline{AB}$ is a tangent segment to circle M
∴ AB = ……… cm.

ⓐ 4	ⓑ $\sqrt{6}$
ⓒ 3	ⓓ 6



(414) If one of the two roots of the equation : x^2 - (b – 6) x + 5 = 0 is the additive inverse of the other root ,then b = ……….

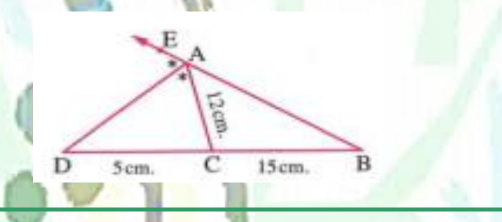
ⓐ - 6	ⓑ 6	ⓒ - 5	ⓓ 5

(415) If sin 2 θ = cos θ then the general solution of the equation = …………

ⓐ $\frac{\pi}{6} + \frac{2}{3}\pi$ on only	ⓑ $\frac{\pi}{2}$ + 2 π on only
ⓒ (a) , (b) together	ⓓ nothing of the previous

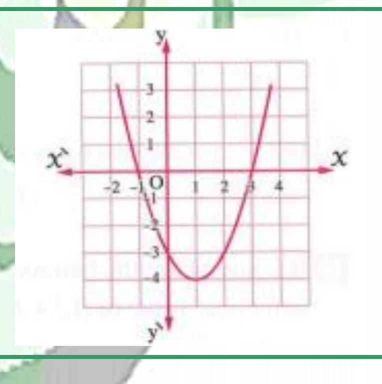
(416) In the opposite figure :
The length of $\overline{AB}$ = ……… cm.

ⓐ 16	ⓑ 48
ⓒ 15	ⓓ 24



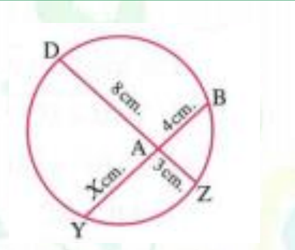
(417) In the opposite figure :
The curve of the function
$f : f(x) = x^2 - 2x - 3$ then the solution set of the inequality $x^2 - 2x - 3 \geq 0$ in ℝ is ……..

ⓐ] – 1 , 3 [	ⓑ] - ∞ , 2 [
ⓒ] 3 , ∞ [	ⓓ] - ∞ - 1] ∪ [3 , ∞ [

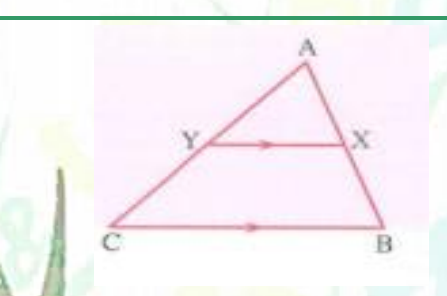




(418) In the opposite figure : AB = 4 cm. , AZ = 3 cm. , AD = 8 cm. then the numerical value of x = …….	
ⓐ 7	ⓑ 9
ⓒ 6	ⓓ 8



(419) In the opposite figure : All the following mathematical expressions are true except = ……..	
ⓐ $\frac{AX}{XB} = \frac{XY}{BC}$	ⓑ $\frac{AX}{AB} = \frac{XY}{BC}$
ⓒ $\frac{AY}{YC} = \frac{AX}{XB}$	ⓓ $\frac{AY}{AC} = \frac{AX}{AB}$

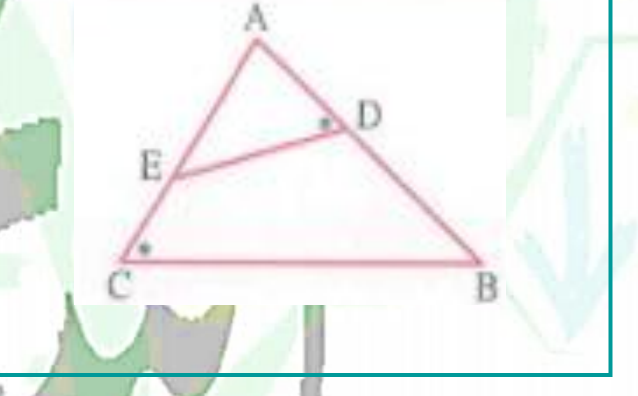




(420) If cos (270° - θ) = - $\frac{1}{2}$ where is the measure of the smallest positive angle then θ = . °			
ⓐ 30	ⓑ 15	ⓒ 45	ⓓ 150

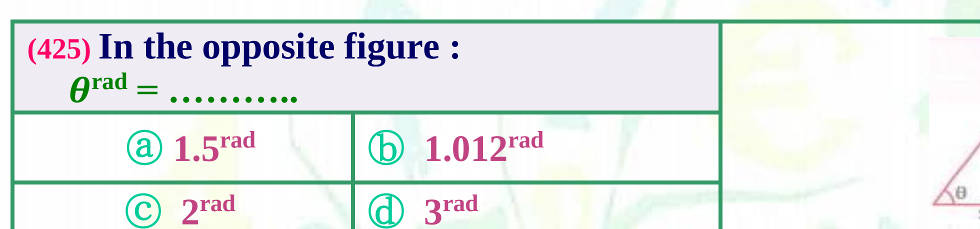
(421) The quadratic equation whose terms coefficients are real numbers and one of its roots is (2 – i) is ……….	
ⓐ $x^2 - 4x + 5 = 0$	ⓑ $x^2 + 4x - 5 = 0$
ⓒ $x^2 - 4x - 5 = 0$	ⓓ $x^2 + 4x + 5 = 0$

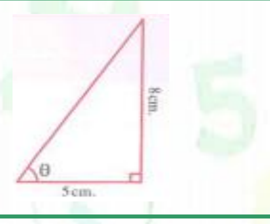
(422) In the opposite figure : The figure DBCE is a cyclic quadrilateral if ……….
ⓐ AD × CE = AE × BD
ⓑ DE × BC= AE × EC
ⓒ AD × AB = DE × BC
ⓓ AD × AB = AE × AC

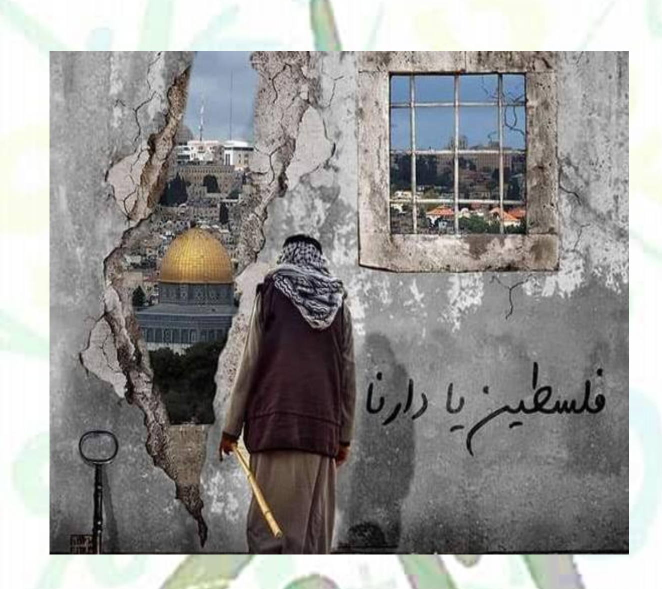


(423) The terminal side of angle 0 in standard position intersects the unit circle at point B $\left(\frac{4}{5}, \frac{3}{5}\right)$ then the value of the expression sin (90° + θ) + cot (180° + θ) cos (90° + θ) = …………			
ⓐ zero	ⓑ $\frac{5}{8}$	ⓒ $\frac{8}{5}$	ⓓ $\frac{4}{5}$

(424) If (3 + i^{16}) (2 + i^{17}) = x + y i , then (x , y) = …………			
ⓐ (4 , - 8)	ⓑ (- 4 , 8)	ⓒ (8 , - 4)	ⓓ (8 , 4)



(425) In the opposite figure : $\theta^{rad} = ...$		
ⓐ 1.5^{rad}	ⓑ 1.012^{rad}	
ⓒ 2^{rad}	ⓓ 3^{rad}	





كيفية طباعة صفحات معينة من ملف معين



مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

خطوة 1

خطوة 2
اختيار اسم الطابعة بتاعتك

خطوة 3
كتابة الصفحات المراد طباعتها
نكتب رقم 4 ثم نكتب الشرطة دي – ثم نكتب 9

خطوة 4
اختيار نوع الورق

خطوة 5
اختيار A4

خطوة 6

حمل الان

مجانا وحصريا

المراجعة رقم (2)







[B] Choose the correct : -

1	The simplest form of the imaginary number $(i)^{73} =$ .... (a) -1 (b) 1 (c) i (d) $-i$ 2021 Exam (7) Question (25)
2	The simplest form of the imaginary number $i^{-43} =$ .... (a) i (b) $-i$ (c) 1 (d) -1 2021 Exam (6) Question (5)
3	$(1-i)^{12} =$ .... (a) $-64\,i$ (b) $64\,i$ (c) -64 (d) 64 2021 Exam (7) Question (29)
4	The conjugate of the number $\left(3+\sqrt{-4}\right)$ is .... (a) $-3-2\,i$ (b) $3+2\,i$ (c) $3-2\,i$ (d) $-3+2\,i$ 2021 Exam (10) Question (15)
5	The conjugate of the number $(2+i)^{-1}$ is .... (a) $2+i$ (b) $2-1$ (c) $\frac{2-i}{5}$ (d) $\frac{2+i}{5}$ 2021 Exam (4) Question (10)
6	If $a = 5+\sqrt{3\,i}$, $b = 5-\sqrt{3\,i}$, then $ab =$ .... (a) 28 (b) 25 (c) 21 (d) 7 2021 Exam (2) Question (1)
7	$\left(\sqrt{2}+i\right)^4\left(\sqrt{2}-i\right)^4 =$ .... (a) 81 (b) 9 (c) $81\,i$ (d) $9\,i$ 2021 Exam (8) Question (1)
8	$(1+i)^4+(1-i)^4 =$ .... (a) 0 (b) 8 (c) -8 (d) 4 2021 Exam (3) Question (3)
9	The simplest form of the expression $(1+i)^2+(1-i)(1+i)-2 =$ .... (a) 2 (b) -2 (c) $2\,i$ (d) $-2\,i$ 2021 Exam (9) Question (3)

10	If $12 + 3\,a\,i = 4\,b - 27\,i$, then $(a , b) =$ .... (a) $(4 , 3)$ (b) $(3 , 2.7)$ (c) $(-9 , 3)$ (d) $(9 , 3)$ 2021 Exam (5) Question (33)
11	If $2\,x - y + (x - 2\,y)\,i = 8 + i$, then $(x , y) =$ .... (a) $(1 , 3)$ (b) $(3 , 1)$ (c) $(-3 , 1)$ (d) $(5 , 2)$ 2021 Exam (3) Question (4)
12	The simplest form of the number $\frac{1+i}{i}$ is .... (a) $1 + i$ (b) $1 - i$ (c) $-1 - i$ (d) $-1 + i$ 2021 Exam (8) Question (12)
13	If $a + b\,i = \frac{5}{2+i}$, then $(a , b) =$ .... (a) $(-2 , -1)$ (b) $(-2 , 1)$ (c) $(2 , -1)$ (d) $(2 , 1)$ 2021 Exam (9) Question (8)
14	If $(2 + i)(3 - 5\,i^5) = (x + y\,i)$, then $x + y =$ .... (a) 4 (b) 5 (c) 6 (d) 7 2021 Exam (1) Question (32)
15	If $a + b\,i = \frac{2+i}{2-i}$, then $a^2 + b^2 =$ .... (a) 1 (b) -1 (c) 2 (d) $-i$ 2021 Exam (6) Question (27)
16	The roots of the equation : $2\,x^2 - 5\,x + 3 = 0$ are .... (a) rational real (b) not real (c) real and equal (d) irrational real 2021 Exam (10) Question (35)
17	The roots of the equation : $x^2 - 2\sqrt{5}\,x + 1 = 0$ are .... (a) rational real. (b) not real. (c) real equal. (d) irrational real. 2021 Exam (7) Question (28)
18	The two roots of the equation : $x + \frac{36}{x} = 12$ where $x \neq 0$ are .... (a) real and equal. (b) real and different. (c) complex and not real. (d) conjugate to each other. 2021 Exam (3) Question (6)

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The solution set of the equation : $x^2 + 16 = 0$ in the set of complex number is ....

(a) $\{4\ i\}$ (b) $\{-4\ i\}$ (c) $\{4\ i\ , -4\ i\}$ (d) $\{4\}$

2021 Exam (1) Question (38)

20

If the curve of the function $f : f(x) = x^2 - 6x + m$ doesn't cut the x-axis , then $m \in$ ....

(a) $\{9\}$ (b) $]9 , \infty[$ (c) $]-\infty , 9[$ (d) $[9 , \infty[$

2021 Exam (9) Question (19)

21

In the opposite figure :

The curve of the function $f : f(x) = x^2 - 2x - 3$

, then the solution set of the inequality $x^2 - 2x - 3 \geq 0$

in $\mathbb{R}$ is ....

(a) $]-1 , 3[$

(b) $]-\infty , 2[$

(c) $]3 , \infty[$

(d) $]-\infty , -1] \cup [3 , \infty[$

2021 Exam (10) Question (29)

22

The equation : $x^2 (x - 1)(x + 1) = 0$ of the .... degree.

(a) first (b) second (c) third (d) fourth

2021 Exam (5) Question (26)

23

If the two roots of the equation : $4x^2 - 12x + c = 0$ are real and equal , then $c =$ ....

(a) 3 (b) 4 (c) 9 (d) 16

2021 Exam (7) Question (26)

24

If the two roots of the equation : $x^2 + (2k + 3)x + k^2 = 0$ are real and equal , then the value of $k =$ ....

(a) $\frac{3}{4}$ (b) $-\frac{3}{4}$ (c) $\frac{4}{3}$ (d) $-\frac{4}{3}$

2021 Exam (9) Question (1)

25

If the equation : $x^2 - 6x + m = 0$ has two equal real roots , then $m =$ ....

(a) 7 (b) 8 (c) 9 (d) 10

2021 Exam (2) Question (5)

26

If the two roots of the equation : $a x^2 + b = 0$ are real and different , then ....

(a) $a b > 0$ (b) $a = 0$ (c) $a > 0 , b > 0$ (d) $a b < 0$

	2021 Exam (4) Question (12)
27	If the two roots of the equation : $16 x^2 - 8 x + k = 0$ are complex and not real , then $k \in$ .... (a) $]1 , \infty[$ (b) $]-\infty , 1[$ (c) $]-\infty , -1[$ (d) $]-\infty , -1]$ 2021 Exam (3) Question (5)
28	If the two roots of the equation : $(x - k)^2 + 4 x = 0$ are additive inverse to each other , then k = ... (a) – 2 (b) zero (c) 2 (d) 4 2021 Exam (1) Question (1)
29	If one of the two roots of the equation : $x^2 - (k + 2) x + 3 = 0$ is the additive inverse of the other root , then k = ... (a) 3 (b) 2 (c) – 2 (d) – 3 2021 Exam (5) Question (22)
30	If one of the two roots of the equation : $k x^2 + (k - 1) x - 3 = 0$ is the additive inverse of the other root , then k = ... (a) 3 (b) – 3 (c) 1 (d) – 1 2021 Exam (8) Question (3)
31	If one of the roots of the equation : $(m - 3) x^2 + 5 x + 7 = 0$ is the multiplicative inverse of the other , then m = ... (a) 10 (b) 3 (c) 8 (d) 2 2021 Exam (2) Question (12)
32	If one of the roots of the equation : $m x^2 - 3 x + 1 = 0$ is multiplicative inverse of the other , then m = ... (a) – 3 (b) – 1 (c) 1 (d) 2 2021 Exam (1) Question (6)
33	If the product of two roots of the equation : $(k - 2) x^2 - 6 x + 12 = 0$ is 3 , then k = ... (a) 4 (b) 38 (c) 6 (d) zero 2021 Exam (6) Question (31)



34	The product of the roots of the equations : $a x^2 + b x + c = 0$, $b x^2 + c x + a = 0$, $c x^2 + a x + b = 0$ equals .... (a) abc (b) − 1 (c) 1 (d) zero 2021 Exam (4) Question (17)
35	If the sum of the two roots of the equation : $a x^2 + b x + c = 0$ equal the product of its the roots , then c = ... (a) − a (b) − b (c) a (d) b 2021 Exam (8) Question (11)
36	If $x = 5$ is a root of the equation : $x^2 + m x = 3 m + 1$, then m = ... (a) − 12 (b) 7 (c) $\frac{29}{3}$ (d) $\frac{-29}{3}$ 2021 Exam (3) Question (1)
37	If (3 + i) is one of the roots of the equation $x^2 + k x + 10 = 0$ where the coefficient of its terms are real numbers , then k = ... (a) 6 (b) − 6 (c) 9 (d) − 9 2021 Exam (1) Question (27)
38	If 2 , 3 are the two roots of the equation : $x^2 + a x + b = 0$, then (a , b) = ... (a) (2 , 3) (b) (5 , 6) (c) (− 5 , − 6) (d) (− 5 , 6) 2021 Exam (10) Question (19)
39	If the difference between the two roots of the equation : $x^2 - 7 x + a = 0$ is 3 , then the value of a = ... (a) 4 (b) 2 (c) − 4 (d) 10 2021 Exam (3) Question (9)
40	If m , $\frac{2}{m}$ are the roots of the equation $a x^2 + b x + 12 = 0$, then a = ... (a) 3 (b) 5 (c) 6 (d) 9 2021 Exam (4) Question (32)
41	If L , L^2 are the roots of the equation : $2 x^2 + b x + 54 = 0$, then b = ... (a) − 12 (b) − 24 (c) 6 (d) 9 2021 Exam (4) Question (18)

42	If L and 5 – L are the roots of the equation : $x^2 + m x + 6 = 0$, then m = …………… (a) – 5 (b) 5 (c) 3 (d) 7 2021 Exam (2) Question (8)
43	If the two roots of the equation : $x^2 + b x + c = 0$ are two consecutive odd numbers , then the value of the expression $(b^2 - 4c)$ = …………… (a) 1 (b) 2 (c) 3 (d) 4 2021 Exam (9) Question (14)
44	If the two roots of the equation : $8 x^2 - k x + 3 = 0$ are positive and the ratio between them is 2 : 3 , then the value of k = …………… (a) 10 (b) – 10 (c) $\frac{5}{4}$ (d) $\frac{-5}{4}$ 2021 Exam (3) Question (7)
45	If one of the two roots of the equation : $x^2 - 9 x + c = 0$ is twice the other root , then c = …………… (a) 9 (b) – 9 (c) 18 (d) – 18 2021 Exam (8) Question (5)
46	If L , M are the two roots of the equation : $x^2 + 3 x - 4 = 0$, then LM = …………… (a) 3 (b) – 3 (c) 4 (d) – 4 2021 Exam (7) Question (24)
47	If L and M are the two roots of the equation : $x^2 + 2 x + 5 = 0$, then $L^2 M^2$ = …………… (a) 5 (b) 10 (c) 25 (d) 4 2021 Exam (10) Question (40)
48	If L and M are the two roots of the equation : $x^2 - 4 x + 2 = 0$ where L > M , then the numerical value of $(L^2 + M^2)$ = …………… (a) 15 (b) 12 (c) 9 (d) 16 2021 Exam (10) Question (20)
49	If L , M are the two roots of the equation : $x^2 + 3 x + 1 = 0$, then the value of the expression : $L^2 + 3 LM + M^2$ = …………… (a) 10 (b) – 10 (c) 9 (d) – 9 2021 Exam (9) Question (4)



50	If L , M are two roots of the equation : $x^2 - 21x + 4 = 0$, then $\sqrt{L} + \sqrt{M} =$ .... (a) 25 (b) 5 (c) -5 (d) ± 5 2021 Exam (5) Question (5)
51	If L and M are two roots of the equation : $x^2 - x - 2 = 0$ where $L > M$, then $2L + 5M^2 =$ .... (a) 10 (b) 5 (c) 9 (d) 11 2021 Exam (1) Question (21)
52	If L and M are the roots of the equation : $x^2 - 6x + 2 = 0$, then $L^2 - 6L =$ .... (a) 2 (b) -2 (c) 4 (d) 3 2021 Exam (2) Question (7)
53	The quadratic equation whose terms coefficients are real numbers and one of its roots is $(2 - i)$ is .... (a) $x^2 - 4x + 5 = 0$ (b) $x^2 + 4x - 5 = 0$ (c) $x^2 - 4x - 5 = 0$ (d) $x^2 + 4x + 5 = 0$ 2021 Exam (10) Question (33)
54	The quadratic equation whose two roots are $(2 - 3i)$, $(2 + 3i)$ is .... (a) $x^2 + 4x + 13 = 0$ (b) $x^2 - 4x + 13 = 0$ (c) $x^2 + 4x - 13 = 0$ (d) $x^2 - 4x - 13 = 0$ 2021 Exam (5) Question (20)
55	The quadratic equation which its two roots are the two dimensions of the rectangle its area 12 cm^2 and its perimeter 14 cm. is .... (a) $x^2 + 7x + 12 = 0$ (b) $x^2 - 7x + 12 = 0$ (c) $x^2 + 12x + 7 = 0$ (d) $x^2 - 12x + 7 = 0$ 2021 Exam (9) Question (7)
56	If L and M are the two roots of the equation : $x^2 - 7x + 3 = 0$, then the quadratic equation whose roots are 3 L , 3 M is .... (a) $x^2 - 14x + 12 = 0$ (b) $x^2 + 14x + 12 = 0$ (c) $x^2 - 21x + 27 = 0$ (d) $x^2 + 14x - 12 = 0$ 2021 Exam (3) Question (8)



57	If L and M are the roots of the equation $x^2 - 3x = -5$, then the equation with roots L + 1 and M + 1 is .... (a) $x^2 - 9x + 5 = 0$ (b) $x^2 - 5x + 9 = 0$ (c) $x^2 - 5x - 3 = 0$ (d) $x^2 + 3x + 5 = 0$ 2021 Exam (1) Question (28)
58	If L and M are two roots of the equation : $x^2 - 5x + 6 = 0$, then the equation whose roots are L – M , M – L is .... (a) $x^2 + 1 = 0$ (b) $x^2 - 1 = 0$ (c) $x^2 + 25 = 0$ (d) $x^2 - x = 0$ 2021 Exam (6) Question (29)
59	The sign of $f : f(x) = -5$ is positive at $x \in$ .... (a) $]-\infty , -5[$ (b) $]-5 , \infty[$ (c) $]-\infty , \infty[$ (d) $\varnothing$ 2021 Exam (7) Question (32)
60	The function f : where $f(x) = 2$ is positive in the interval .... (a) $]-\infty , 2[$ (b) $[-2 , 2]$ (c) $]-\infty , \infty[$ (d) $]-\infty , -2[$ 2021 Exam (6) Question (23)
61	The function $f : [-3 , 8] \longrightarrow \mathbb{R}$ where $f(x) = 8 - 2x$ is positive in the interval .... (a) $[-3 , 4[$ (b) $[-4 , 4]$ (c) $]-3 , 4[$ (d) $]-2 , 2[$ 2021 Exam (6) Question (33)
62	The function $f : f(x) = 7 - x$ is not negative where : (a) $x \geq 7$ (b) $x > 7$ (c) $x \leq 7$ (d) $x = 7$ 2021 Exam (8) Question (7)
63	If $[-3 , 2] \longrightarrow \mathbb{R}$, $f(x) = 3x + 6$, then the sign of the function f is negative in the interval .... (a) $]-2 , \infty[$ (b) $[-3 , -2[$ (c) $]-\infty , -2[$ (d) $[-2 , 2]$ 2021 Exam (3) Question (10)
64	The sign of $f : f(x) = -x$ is negative at .... (a) $x > -1$ (b) $x < -1$ (c) $x > 0$ (d) $x < 0$ 2021 Exam (10) Question (17)
65	The sign of the function $f : f(x) = 8 - 4x$ is not positive when .... (a) $x \geq 2$ (b) $x > 2$ (c) $x < 2$ (d) $x \leq 2$

	2021 Exam (9) Question (18)
66	If the sign of $f(x) = kx - 10$ is positive on the interval $]5, \infty[$ and nagative on the interval $]-\infty, 5[$, then k = ... (a) 5 (b) -2 (c) 2 (d) -10 2021 Exam (1) Question (2)
67	If $f(x) = x^2 + 9$, then the solution set of the inequality $f(x) \le 0$ in $\mathbb{R}$ is .... (a) $\{-3, 3\}$ (b) $]3, \infty[$ (c) $]-\infty, 3]$ (d) $\varnothing$ 2021 Exam (1) Question (36)
68	The function $f : f(x) = (3 - x)^2$ is positive for all $x \in$ .... (a) $]3, \infty[$ (b) $]-\infty, 3[$ (c) $\mathbb{R} - \{3\}$ (d) $]-3, 3[$ 2021 Exam (8) Question (8)
69	The function $f : f(x) = -(x - 1)(x + 2)$ is positive in the interval .... (a) $]1, 2[$ (b) $[-1, 2]$ (c) $]-2, 1[$ (d) $]-\infty, \infty[$ 2021 Exam (4) Question (25)
70	If the function $f : f(x) = ax^2 + bx + c$ and $a < 0$ and the two roots of the equation $f(x) = 0$ are $2, -5$, then the function f is positive in .... (a) $\{-5, 2\}$ (b) $\mathbb{R} -]-5, 2[$ (c) $]-5, 2[$ (d) $[-5, 2]$ 2021 Exam (10) Question (9)
71	If the function $f : f(x) = ax^2 + bx + c$, $a > 0$ and the two roots of $f(x) = 0$ are $2, -5$, then the function f is positive in .... (a) $\{-5, 2\}$ (b) $\mathbb{R} -]-5, 2[$ (c) $]-5, 2[$ (d) $\mathbb{R} - [-5, 2]$ 2021 Exam (3) Question (11)
72	Which of the following functions is positive for all values of $x \in \mathbb{R}$: (a) $f : f(x) = x^2 + 4$ (b) $f : f(x) = (x - 1)^2 + 9$ (c) $f : f(x) = 3$ (d) all of (a), (b), (c) 2021 Exam (4) Question (29)
73	The function $f : f(x) = x^2 - 9$ is negative at $x \in$ .... (a) $\mathbb{R} - [-3, 3]$ (b) $]-3, 3[$ (c) $]-\infty, -9[$ (d) $]-\infty, -3[$ 2021 Exam (10) Question (6)

74	The function f where $f(x) = (x-1)(x+3)$ is negative in the interval .... (a) $]-3, 1[$ (b) $]-1, 3[$ (c) $[-3, -1]$ (d) $]-3, 3[$ 2021 Exam (6) Question (22)
75	If L , M are the two roots of the equation : $a x^2 + b x + c = 0$ where $a > 0$, $L < M$, then the solution set of the inequality : $a x^2 + b x + c < 0$ is .... (a) $]-\infty, L[$ (b) $]L, M[$ (c) $]M, \infty[$ (d) $\mathbb{R} - [L, M]$ 2021 Exam (7) Question (30)
76	The function which has a positive sign in $\mathbb{R} - \{2\}$ is $f(x) =$ .... (a) $(x-2)(x+2)$ (b) $x^2 - 4x + 4$ (c) $x - 2$ (d) $(x+2)^2$ 2021 Exam (1) Question (7)
77	If the discriminant of the equation : $a x^2 + b x + c = 0$ is negative , then the solution set of the inequality : $a x^2 + b x + c < 0$, where $a < 0$ in $\mathbb{R}$ is .... (a) $\mathbb{R}$ (b) $\varnothing$ (c) $\mathbb{R}^+$ (d) $\mathbb{R}^-$ 2021 Exam (5) Question (15)
78	The two functions $f : f(x) = (x-1)(x+2)$ and $g : g(x) = -x^2 + 9$ are positive together when $x \in$ .... (a) $]1, 3[\cup]-3, -2[$ (b) $]-2, 0[$ (c) $]3, \infty[\cup]-\infty, -3[$ (d) $]-3, 3[$ 2021 Exam (5) Question (18)
79	If $(y-4)^2 = 36$, $y < 0$, then $y + 4 =$ .... (a) -2 (b) 2 (c) 10 (d) 14 2021 Exam (4) Question (1)
80	Which of the following does not belong to the solution set of the inequality : $3x - 5 \geq 4x - 3$? (a) -1 (b) -2 (c) -3 (d) -5 2021 Exam (5) Question (13)
81	The solution set of the inequality : $x^2 \geq 4x + 21$ in $\mathbb{R}$ is .... (a) $[-3, 7]$ (b) $\mathbb{R} -]-3, 7[$ (c) $\mathbb{R} - \{-3, 7\}$ (d) $\{7\}$ 2021 Exam (8) Question (9)

82	S.S. of the inequality : $9 - x^2 \geq 0$ is …………… (a) $]-3 , 3[$ (b) $[-3 , 3]$ (c) $\mathbb{R} -]-3 , 3[$ (d) $\mathbb{R} - [-3 , 3]$ 2021 Exam (2) Question (10)
83	The solution set of the inequality : $4x - x^2 - 4 < 0$ in $\mathbb{R}$ is …………… (a) $\mathbb{R}$ (b) $\mathbb{R}^+$ (c) $\mathbb{R}^-$ (d) $\mathbb{R} - \{2\}$ 2021 Exam (5) Question (40)
84	The solution set of the inequality : $x(x+3) < 0$ in $\mathbb{R}$ is …………… (a) $\{0 , -3\}$ (b) $]-3 , 2]$ (c) $[-3 , 0[$ (d) $]-3 , 0[$ 2021 Exam (6) Question (19)
85	The solution set of the inequality : $(x-3)(x-4) > 0$ in $\mathbb{R}$ is …………… (a) $\{3 , 4\}$ (b) $]3 , 4[$ (c) $[3 , 4]$ (d) $\mathbb{R} - [3 , 4]$ 2021 Exam (3) Question (12)
86	The solution set of the inequality : $-x(x+2) \geq 0$ in $\mathbb{R}$ is …………… (a) $\{0 , -2\}$ (b) $[-2 , 0]$ (c) $]-2 , 0[$ (d) $[-2 , 2]$ 2021 Exam (4) Question (31)
87	The solution set of the inequality : $(2x-3)^2 > -5$ in $\mathbb{R}$ is …………… (a) $\varnothing$ (b) $\mathbb{R}^+$ (c) $\mathbb{R}^-$ (d) $\mathbb{R}$ 2021 Exam (9) Question (10)
88	**In the opposite figure :** The curve of the function $f : f(x) = x^2 - 2x - 3$, then the solution set of the inequality $x^2 - 2x - 3 \geq 0$ in $\mathbb{R}$ is …………… (a) $]-1 , 3[$ (b) $]-\infty , 2[$ (c) $]3 , \infty[$ (d) $]-\infty , -1] \cup [3 , \infty[$ 2021 Exam (10) Question (29)



89	The angle of measure 2109° lies in the .... quadrant. (a) first (b) second (c) third (d) fourth 2021 Exam (3) Question (13)
90	The angle whose measure is (– 850°) lies in the .... quadrant. (a) first (b) second (c) third (d) fourth 2021 Exam (6) Question (14)
91	The angle whose measure is 600° in the standard position is equivalent to the angle of measure ....° (a) 120 (b) 240 (c) 300 (d) 420 2021 Exam (10) Question (2)
92	The angle whose measure is 120° in the standard position is equivalent to the angle of measure .... (a) 420° (b) 240° (c) – 300° (d) – 240° 2021 Exam (8) Question (33)
93	All the angles of the following measures lies in the second quadrant except .... (a) – 240° (b) – 120° (c) 100° (d) 860° 2021 Exam (4) Question (4)
94	The degree measure of the angle of measure $\frac{7\pi}{6}$ is .... (a) 105° (b) 210° (c) 420° (d) 840° 2021 Exam (8) Question (35)
95	The angle of measure $\frac{-9\pi}{4}$ lies in the .... quadrant. (a) first (b) second (c) third (d) fourth 2021 Exam (10) Question (27)
96	The radian measure of the central angle opposite to an arc of length 6 cm. in a circle of diameter length 12 cm. is .... (a) $\left(\frac{1}{2}\right)^{rad}$ (b) $(1)^{rad}$ (c) $(3)^{rad}$ (d) $(\pi)^{rad}$ 2021 Exam (2) Question (13)



97	A radian and degree measure of a central angle subtends an arc whose length 3 cm. in a circle whose surface area is 16π cm^2 = ... , ... (a) 1^{rad} , 180° (b) 1.5^{rad} , 86° (c) 1.75^{rad} , 90° (d) 0.75^{rad} , 42° 58′ 2021 Exam (5) Question (3)
98	The arc of length 5π cm. in a circle with radius length 15 cm. is opposite to central angle of measure ....° (a) 30 (b) 60 (c) 90 (d) 180 2021 Exam (4) Question (2)
99	The arc length in a circle of radius 6 cm. , opposite to central angle of measure $\frac{\pi}{2}$ is .... (a) $\frac{3\pi}{2}$ (b) 2π (c) $\frac{5\pi}{2}$ (d) 3π 2021 Exam (7) Question (33)
100	In a circle of diameter length 24 cm. the length of the arc subtended by a central angle of measure 30° equals .... cm. (a) 2π (b) 3π (c) 4π (d) π 2021 Exam (6) Question (15)
101	The string length of a simple pendulum is 14 cm. swings in an angle of measure $\frac{\pi}{10}$, then its arc length ≃ .... cm. (a) 4.4 (b) 4.6 (c) 4.8 (d) 4.9 2021 Exam (4) Question (20)
102	The central angle with measure 120° and includes an arc with length l cm. in a circle with radius 6 cm. , then $l \simeq$ .... cm. (a) 12.57 (b) 10 (c) 125.4 (d) 1.254 2021 Exam (1) Question (11)
103	If the length of an arc in a circle equals $\frac{5}{8}$ of its circumference , then the measure of the central angle subtending to this arc in degrees equals .... (a) 30° (b) 67° 30′ (c) 225° (d) 240° 2021 Exam (3) Question (14)

104

If the ratio between measures of the interior angles of a quadrilateral is 5 : 4 : 9 : 6 , then the measure of the smallest angle equals ....

(a) $\frac{\pi}{12}$ (b) $\frac{\pi}{3}$ (c) $\frac{5\pi}{12}$ (d) $\frac{2\pi}{3}$

2021 Exam (4) Question (22)

105

Measure of the central angle subtends an arc whose length equals the diameter of the circle = ...° (Rounded to the nearest degree).

(a) 113 (b) 115 (c) 120 (d) 180

2021 Exam (5) Question (6)

106

In the opposite figure :

If AD = 6 cm. , $\tan B + \tan C = \frac{5}{3}$

, then BC = ... cm.

(a) 6 (b) 8

(c) 10 (d) 14

A
6cm.
C D B

2021 Exam (4) Question (23)

107

In the opposite figure :

If $A\left(1 , \sqrt{3}\right)$, $B\left(-1 , \sqrt{3}\right)$

, then $\cot(\angle AOB)$ = ...

(a) 1 (b) $\frac{1}{2}$

(c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

y
B A
x` x
O
y`

2021 Exam (5) Question (28)

108

If ABCD is a cyclic quadrilateral and $\sin A = \frac{3}{5}$, then sin C = ...

(a) $\frac{3}{5}$ (b) $\frac{-3}{5}$ (c) $\frac{4}{5}$ (d) $\frac{-4}{5}$

2021 Exam (4) Question (26)

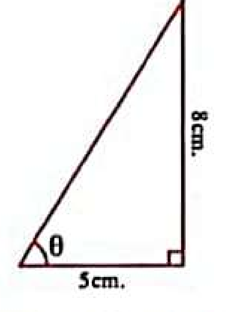
109

$\tan^{-1}\left(\frac{1}{\sqrt{3}}\right) + \cot^{-1}\left(\sqrt{3}\right)$ = ...

(a) $\frac{\pi}{3}$ (b) $\frac{\pi}{2}$ (c) $\frac{3\pi}{2}$ (d) $\frac{\pi}{6}$

2021 Exam (4) Question (35)

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110	**In the opposite figure :** $\theta^{rad} = \dots\dots\dots$ (a) 1.5^{rad} (b) 1.012^{rad} (c) 2^{rad} (d) 3^{rad}  2021 Exam (10) Question (39)
111	If $\sec 3\theta = 2$ where θ is an acute angle , then $\theta = \dots\dots\dots^{\circ}$ (a) 10 (b) 15 (c) 20 (d) 30 2021 Exam (7) Question (38)
112	If $\sin\theta = -\frac{1}{2}$, $\cos\theta = \frac{\sqrt{3}}{2}$, then $\theta = \dots\dots\dots^{\circ}$ (a) 30 (b) 150 (c) 210 (d) 330 2021 Exam (7) Question (39)
113	If $\sin\theta = -1$, $\cos\theta = 0$, then the measure of angle $\theta = \dots\dots\dots$ (a) $\frac{\pi}{2}$ (b) π (c) $\frac{3\pi}{2}$ (d) 2π 2021 Exam (6) Question (4)
114	If the terminal side of angle θ in its standard position cut the unit circle at the point $\left(-\frac{\sqrt{3}}{2}, y\right)$ where $y \in \mathbb{R}^{+}$, then $\theta = \dots\dots\dots^{\circ}$ (a) 30 (b) 150 (c) 210 (d) 330 2021 Exam (9) Question (20)
115	If the terminal side of the angle θ in its standard position , cuts the unit circle at point $\left(\frac{3}{5}, y\right)$ where $y > 0$, then $\tan(\theta) = \dots\dots\dots$ (a) $\frac{4}{3}$ (b) $\frac{3}{4}$ (c) $\frac{5}{4}$ (d) 1 2021 Exam (1) Question (12)
116	If $x \sin\frac{\pi}{4}\cos\frac{\pi}{4} = \tan^2\frac{\pi}{4} + \cos^2\frac{\pi}{3}$, then $x = \dots\dots\dots$ (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{5}{2}$ (c) $\frac{2}{\sqrt{3}}$ (d) $\frac{-1}{\sqrt{2}}$ 2021 Exam (3) Question (15)



117	If $\cos \alpha = \frac{-3}{5}$, $90° < \alpha < 180°$, $5 \sin \alpha + 3 \tan \alpha =$ .... (a) 0 (b) 1 (c) – 1 (d) 2 2021 Exam (2) Question (20)
118	If $\theta \in]\frac{\pi}{2}, \pi[$, $\sin \theta = \frac{12}{13}$, then the value of : $\tan \theta \cot \theta + \cos^2 \theta =$ .... (a) $\frac{25}{169}$ (b) $\frac{194}{169}$ (c) $\frac{25}{144}$ (d) $\frac{169}{25}$ 2021 Exam (3) Question (16)
119	If $\sin(\theta + 10°) = \frac{1}{2}$ where $\theta \in]0°, \frac{\pi}{2}[$, then $m(\angle \theta) =$ .... (a) 20° (b) 60° (c) 90° (d) 180° 2021 Exam (8) Question (37)
120	If $\cos^2 \theta = \frac{9}{25}$ where $90° < \theta < 180°$, then the value of : $25 \sin \theta + 4 \cot \theta =$ .... (a) 23 (b) 17 (c) – 17 (d) – 23 2021 Exam (3) Question (20)
121	$\cos(-30°) =$ .... (a) $-\sqrt{3}$ (b) $-\frac{\sqrt{3}}{2}$ (c) $\frac{2}{\sqrt{3}}$ (d) $\frac{\sqrt{3}}{2}$ 2021 Exam (8) Question (39)
122	$\tan 495° =$ .... (a) 1 (b) – 1 (c) $\frac{\sqrt{2}}{2}$ (d) $\frac{1}{2}$ 2021 Exam (1) Question (17)
123	$\frac{\tan 65°}{\cot 25°} =$ .... (a) 1 (b) 2 (c) $\frac{1}{2}$ (d) 3 2021 Exam (2) Question (17)
124	If θ is a positive acute angle , $\frac{\sin(\theta + 10°)}{\cos(40°)} = 1$, then $\theta =$ ....° (a) 40 (b) 50 (c) 10 (d) 70 2021 Exam (1) Question (26)
125	$\frac{\sin 56°}{\cos 34°} + \tan 35° \cot 35° =$ .... (a) – 2 (b) zero (c) 1 (d) 2 2021 Exam (9) Question (6)

126	The simplest form of the expression : $\cos(180° + \theta) + \sin(90° + \theta) =$ .... (a) $2 \sin\theta$ (b) $2 \cos\theta$ (c) 2 (d) zero 2021 Exam (9) Question (2)
127	$2 \sin(360° - \theta) + 3 \sin(-\theta) + 6 \cos(270° + \theta) =$ .... (a) zero (b) $7 \sin\theta$ (c) $11 \sin\theta$ (d) $\sin\theta$ 2021 Exam (9) Question (11)
128	$\tan(180° + \theta) \times \cot\theta =$ .... (a) zero (b) -1 (c) $\cot\theta$ (d) 1 2021 Exam (10) Question (34)
129	In a right-angled triangle , measure of one of its acute angles is $x°$ where $\sin x = \frac{4}{5}$, then $\cos(90° - x°) =$ .... (a) $\frac{3}{5}$ (b) $\frac{-3}{5}$ (c) $\frac{-4}{5}$ (d) $\frac{4}{5}$ 2021 Exam (5) Question (12)
130	If $A + B = 90°$ and $\tan A = \frac{1}{3}$, then $\tan B =$ .... (a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) 1 (d) 3 2021 Exam (4) Question (8)
131	The value of θ where $0 \le \theta \le 90°$ which satisfies : $\tan(\theta + 20°) = \cot(3\theta + 30°)$ from the following is .... (a) 40 (b) 10 (c) 90 (d) 50 2021 Exam (7) Question (36)
132	If $\sin 3\theta = \cos 6\theta$, $0° < \theta < 90°$, then $\theta =$ .... (a) 10° (b) 15° (c) 20° (d) 25° 2021 Exam (2) Question (19)
133	If $\sin(3\theta - 25°) = \cos(2\theta - 35°)$, where $0° < \theta < 45°$, then the value of $\sin(180° - \theta) =$ .... (a) $\frac{1}{3}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$ 2021 Exam (9) Question (9)



134	If $\sin 2\theta = \cos\theta$, then the general solution of the equation = …………… (a) $\frac{\pi}{6} + \frac{2}{3}\pi n$ only (b) $\frac{\pi}{2} + 2\pi n$ only (c) (a) , (b) together. (d) nothing of the previous. 2021 Exam (10) Question (25)
135	If $\tan(180° + 5\theta) + \tan(270° + 4\theta) = 0$ where $\theta \in]0, \frac{\pi}{2}[$, then $m(\angle\theta) =$ ……………° (a) 10 (b) 20 (c) 60 (d) 45 2021 Exam (5) Question (9)
136	If $\cos(270° - \theta) = \frac{-1}{2}$ where θ is the measure of the smallest positive angle , then θ = ……………° (a) 30 (b) 150 (c) 210 (d) 330 2021 Exam (3) Question (17)
137	The terminal side of angle θ in standard position intersects the unit circle at point $B\left(\frac{4}{5}, \frac{3}{5}\right)$, then the value of the expression $\sin(90° + \theta) + \cot(180° + \theta)\cos(90° + \theta) =$ …………… (a) zero (b) $\frac{5}{8}$ (c) $\frac{8}{5}$ (d) $\frac{4}{5}$ 2021 Exam (10) Question (37)
138	If $\sin\theta = \frac{3}{5}$, θ is positive acute angle , then value of : $\sin(180° - \theta)\sin(90° + \theta) =$ …………… (a) $\frac{12}{25}$ (b) $-\frac{12}{25}$ (c) $\frac{9}{25}$ (d) $\frac{16}{25}$ 2021 Exam (2) Question (18)
139	If $f(X) = \cos 6\theta$, then the range of the function is …………… (a) $[-6, 6]$ (b) $[-1, 1]$ (c) $[1, 6]$ (d) $]-1, 1[$ 2021 Exam (3) Question (19)
140	Range of the function f where $f(\theta) = \frac{1}{2}\sin 3\theta$ is …………… (a) $[-\frac{1}{2}, \frac{1}{2}]$ (b) $[-2, 2]$ (c) $[-\frac{3}{2}, \frac{3}{2}]$ (d) $[-3, 3]$ 2021 Exam (2) Question (16)
141	The range of the function $f : f(X) = 3\sin 2X$ is …………… (a) $[-2, 2]$ (b) $]-2, 2[$ (c) $[-3, 3]$ (d) $]-3, 3[$ 2021 Exam (7) Question (34)

142 The range of the function $f : f(X) = 3 \sin \theta$ where $\pi < \theta < 2\pi$ is ....

(a) $[-3, 3]$ (b) $[-3, 0]$ (c) $[0, 3]$ (d) $\mathbb{R}$

2021 Exam (9) Question (15)

143 If the range of the function $f : f(X) = a \sin(X)$ where $X \in [0, 2\pi]$ is $[-5, 5]$, then $a \in$ ....

(a) $\{5\}$ (b) $\{-5\}$ (c) $]-5, 5[$ (d) $\{-5, 5\}$

2021 Exam (1) Question (37)

144 If $\theta = \sin^{-1} 0.6$ where θ is the measure of the smallest positive angle, then $\theta =$ ....

(a) $36^\circ 52'$ (b) $52^\circ 36'$ (c) $120^\circ 33'$ (d) $40^\circ 15'$

2021 Exam (6) Question (10)

145 If the lengths of two corresponding sides of two similar triangles are 7 cm., 11 cm., then the ratio between their perimeters is ....

(a) $\frac{49}{121}$ (b) $\frac{7}{18}$ (c) $\frac{7}{11}$ (d) $\frac{11}{18}$

2021 Exam (4) Question (15)

146 If k is the similarity factor of polygon P_1 to polygon P_2 and $0 < k < 1$, then the polygon P_1 is .... to polygon P_2

(a) congruent (b) an enlargement (c) a shrinking (d) twice the area

2021 Exam (4) Question (5)

147 If polygon m_1 is minimize of polygon m_2, with scale factor k, then ....

(a) $k > 1$ (b) $k < 1$ (c) $k = 1$ (d) $0 < k < 1$

2021 Exam (9) Question (39)

148 The rhombus in which measure of one of its angles 70° is similar to the rhombus which measure of one of its angles = ...

(a) 100° (b) 110° (c) 120° (d) 130°

2021 Exam (8) Question (15)

149 The polygon ABCD ~ the polygon XYZL, AB = 32 cm., BC = 40 cm., XY = 3 m − 1, YZ = 3 m + 1, then the numerical value of m = ...

(a) 3 (b) 4 (c) 5 (d) 6

2021 Exam (5) Question (36)

150 Two regular pentagon polygons the side length of the first = 5 cm. and the perimeter of the second = 30 cm. , then the ratio between side length of the first : the side length of the second = ...

(a) 1 : 6 (b) 1 : 2 (c) 1 : 5 (d) 5 : 6

2021 Exam (8) Question (16)

151 Two similar rectangles , the length of the first is three times its width , if the length of the second 12 cm. , then its width = ... cm.

(a) 2 (b) 3 (c) 4 (d) 6

2021 Exam (8) Question (32)

152 The dimensions of a rectangle are 10 cm. , 6 cm. if the scale factor equals 3 , then the perimeter of another of rectangle similar to it = ... cm.

(a) 96 (b) 69 (c) 15 (d) 30

2021 Exam (10) Question (4)

153 All .... are similar.

(a) triangles (b) rectangles (c) squares (d) parallelograms

2021 Exam (7) Question (6)

154 If the polygon ABCD ~ polygon XYZL , then AB × ZL = XY × ....

(a) ZL (b) AC (c) BC (d) CD

2021 Exam (6) Question (1)

155 Which of the following polygons are similar ?

30°

(1) (2) (3) (4)

(a) Polygons (1) , (2) (b) Polygons (1) , (3)

(c) Polygons (1) , (4) (d) Polygons (3) , (4)

2021 Exam (3) Question (38)



156

Which of the following two polygons are similar ?

(1) (2) (3) (4)

(a) polygons (1) , (2)

(b) polygons (3) , (1)

(c) polygons (3) , (4)

(d) polygons (2) , (4)

2021 Exam (10) Question (1)

157

In the opposite figure :

If ABCD ~ XYZL , the perimeter of the figure XYZL = 26 cm. , AD = 10 cm. , BC = 22 cm. , AB = AD = DC , then $\frac{AD}{XL}$ = ……………

(a) 1 : 2

(b) 2 : 3

(c) 3 : 4

(d) 2 : 1

2021 Exam (8) Question (14)

158

In the opposite figure :

If $\overline{AD}$ // $\overline{XY}$ // $\overline{BC}$, AX = YC , XB = 8 cm. , DY = 2 cm. , then AX = …………… cm.

(a) 2

(b) 4

(c) 16

(d) 8

2021 Exam (8) Question (23)

159

In the opposite figure :

$\overline{AD}$ // $\overline{XY}$ // $\overline{BC}$, AX : XB = 2 : 3 , CD = 15 cm. , then DY = …………… cm.

(a) 3

(b) 4

(c) 5

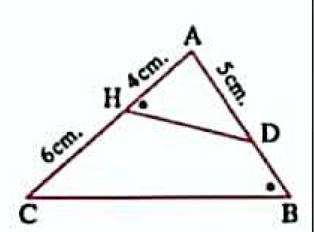
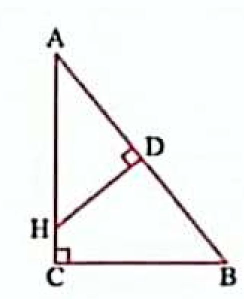
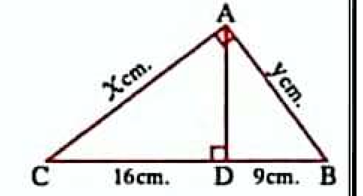
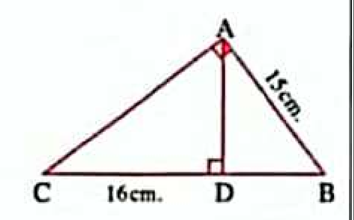
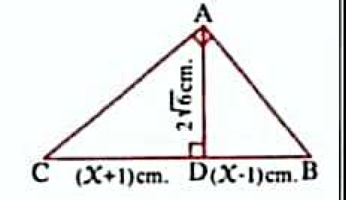
(d) 6

2021 Exam (9) Question (34)

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160	Which two triangles of the following are similar ? (1) (2) (3) (4) (a) ΔΔ (1) , (2) (b) ΔΔ (2) , (3) (c) ΔΔ (3) , (4) (d) ΔΔ (1) , (4) 2021 Exam (8) Question (13)
161	If Δ ABC ~ Δ XYZ , and 2 AB = 3 XY , then the perimeter of Δ ABC : the perimeter of Δ XYZ = ... (a) 4 : 9 (b) 9 : 4 (c) 2 : 3 (d) 3 : 2 2021 Exam (9) Question (28)
162	A triangle in which two angles are of measures 50° , 70° is similar to a triangle in which two angles are measures 50° , ...° (a) 60 (b) 80 (c) 55 (d) 40 2021 Exam (5) Question (24)
163	**In the opposite figure :** Δ ABC is right-angled at A , then BC = ... cm. (a) 15 (b) 20 (c) 13 (d) 21 2021 Exam (2) Question (27)
164	**In the opposite figure :** Δ ABC ~ Δ ADE , then the value of X = ... (a) 11 (b) 1 (c) 12 (d) 10 2021 Exam (3) Question (21)



165	**In the opposite figure :** $m(\angle AHD) = m(\angle ABC)$, AD = 5 cm. , AH = 4 cm. , HC = 6 cm. , then DB = ... (a) 5 (b) 4 (c) 3 (d) 8  2021 Exam (1) Question (39)
166	**In the opposite figure :** $\Delta ABC \sim \Delta AHD$ and if $m(\angle B) = 3X + 10°$ and $m(\angle AHD) = X + 30°$, then $m(\angle A)$ = ...° (a) 50 (b) 40 (c) 30 (d) 60  2021 Exam (4) Question (6)
167	**In the opposite figure :** $\frac{y}{X}$ = ... (a) $\frac{4}{3}$ (b) $\frac{3}{4}$ (c) $\frac{16}{9}$ (d) $\frac{9}{16}$  2021 Exam (10) Question (16)
168	**In the opposite figure :** ABC is a right-angled triangle at A , $\overline{AD} \perp \overline{BC}$, then AD = ... cm. (a) 18 (b) 25 (c) 12 (d) 20  2021 Exam (3) Question (22)
169	**In the opposite figure :** X = ... cm. (a) 6 (b) 7 (c) 5 (d) 8  2021 Exam (2) Question (38)



170

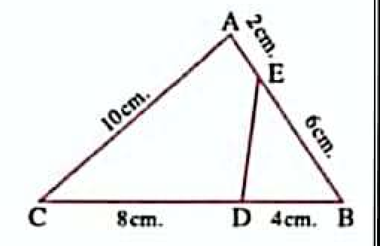
In the opposite figure :

If EB = 6 cm. , CD = 8 cm. , AC = 10 cm.

, AE = 2 cm. , DB = 4 cm. , then ED = ... cm.

(a) 2 (b) 4

(c) 3 (d) 5



2021 Exam (6) Question (3)

171

In the opposite figure :

AD = 4 cm. , CH = 16 cm. , AB = 6 cm. , DC = 8 cm.

, then $\frac{HD}{BC}$ = ...

(a) $\frac{4}{3}$ (b) $\frac{3}{4}$

(c) $\frac{2}{3}$ (d) $\frac{1}{2}$

2021 Exam (5) Question (7)

172

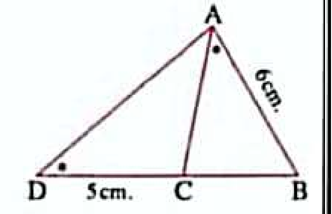
In the opposite figure :

If m (∠ BAC) = m (∠ D) , AB = 6 cm.

, DC = 5 cm. , then BC = ... cm.

(a) 6 (b) 9

(c) 10 (d) 4



2021 Exam (6) Question (8)

173

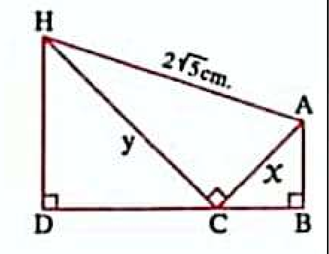
In the opposite figure :

Δ ABC ~ Δ CDH , BC = $\frac{1}{2}$ DH

, then $x \times y$ = ...

(a) 3 (b) 6

(c) 8 (d) 10



2021 Exam (1) Question (13)

174

If the ratio between the length of two corresponding sides of two similar polygons 3 : 5

, then the area of greatest polygon = ... the area of the smallest polygon.

(a) $\frac{9}{25}$ (b) $\frac{25}{9}$ (c) $\frac{3}{5}$ (d) $\frac{5}{3}$

2021 Exam (9) Question (22)



175

In the opposite figure :

$\frac{\text{The area of the smaller triangle}}{\text{The area of the greater triangle}} = \frac{\cdots\cdots}{\cdots\cdots}$

3cm.
5cm.
9cm.

(a) $\frac{25}{81}$
(b) $\frac{1}{3}$
(c) $\frac{16}{81}$
(d) $\frac{9}{64}$

2021 Exam (8) Question (22)

176

The ratio between perimeter of two similar polygons is 4 : 9 , then the ratio between their areas is ……………

(a) 4 : 9 (b) 9 : 4 (c) 16 : 81 (d) 2 : 3

2021 Exam (2) Question (23)

177

If Δ ABC ~ Δ LMN and AB = 2 LM , then $\frac{\text{area of } \Delta \text{ LMN}}{\text{area of } \Delta \text{ ABC}}$ = ……………

(a) $\frac{1}{2}$ (b) 2 (c) $\frac{1}{4}$ (d) 4

2021 Exam (5) Question (10)

178

Two similar triangles , its areas 13 cm^2 and 52 cm^2 , then the ratio between the lengths of two corresponding sides is ……………

(a) 1 : 4 (b) 1 : 2 (c) 1 : 5 (d) 2 : 1

2021 Exam (8) Question (30)

179

Two similar polygons , the ratio between their areas is 4 : 25 , then the ratio between their perimeters is ……………

(a) 2 : 5 (b) 5 : 2 (c) 4 : 5 (d) 8 : 50

2021 Exam (1) Question (29)

180

If the ratio between the lengths of the diagonals of two squares is 2 : 5 and the area of the smaller square is 4 cm^2 , then the area of the greater square = …………… cm^2

(a) 25 (b) 16 (c) 10 (d) 20

2021 Exam (4) Question (16)

181

A piece of land of the shape of rectangle its dimensions are 6 m. , 9 m. If we want to double its area by increasing each of the two dimensions by the same value , then the added value equals …………… m.

(a) 3 (b) 5 (c) 7 (d) 9

2021 Exam (4) Question (11)



182

The ratio between the length of diameters of two circles is 3 : 5 , if the area of greater circle = 75 cm^2 , then the area of smaller circle = ... cm^2

(a) 81 (b) 27 (c) 25 (d) 125

2021 Exam (8) Question (19)

183

In the opposite figure :

$\overline{AB} \cap \overline{CD} = \{E\}$, a (Δ ACE) = 100 cm^2

, then a (Δ DEB) = ... cm^2

(a) 1296 (b) 1080

(c) 750 (d) 400

2021 Exam (3) Question (25)

184

In the opposite figure :

$\overline{DB} \cap \overline{EC} = \{A\}$, AE = 9 cm.

, AB = 10 cm. , AC = 15 cm. , DA = 6 cm.

, area (Δ ADE) = 36 cm^2

, then area (Δ ABC) = ... cm^2

(a) 60 (b) 75

(c) 100 (d) 225

2021 Exam (9) Question (36)

185

In the opposite figure :

If the area of the smaller triangle = 16 cm^2 , then the area of the greater triangle = ... cm^2

(a) 32 (b) 8

(c) 64 (d) 24

2021 Exam (8) Question (18)

186

In the opposite figure :

If $\overline{ED} // \overline{BA}$, BE = 6 cm. , EC = 4 cm.

, the area of the figure ABED = 42 cm^2

, then the area of Δ CED = ... cm^2

(a) 16 (b) 10 (c) 8 (d) 20

2021 Exam (6) Question (30)

187

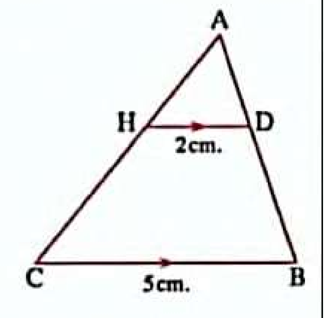
In the opposite figure :

If the area of triangle ADH = 24 cm^2 , $\overline{DH}$ // $\overline{BC}$

, then the area of the shape DBCH = ... cm^2

(a) 36 (b) 126

(c) 136 (d) 100



2021 Exam (1) Question (10)

188

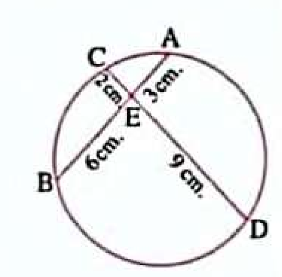
In the opposite figure :

If $\overline{AB} \cap \overline{CD} = \{E\}$, AE = 3 cm. , CE = 2 cm.

, BE = 6 cm. , then ED = ... cm.

(a) 9 (b) 8

(c) 7 (d) 6



2021 Exam (6) Question (16)

189

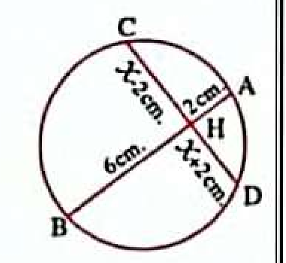
In the opposite figure :

AH = 2 cm. , BH = 6 cm. , DH = $(x + 2)$ cm.

, HC = $(x - 2)$ cm. , then x = ... cm.

(a) 6 (b) 2

(c) 4 (d) 10



2021 Exam (1) Question (14)

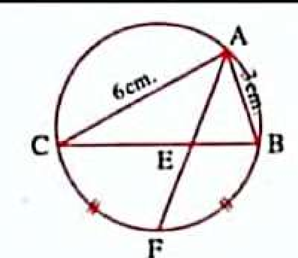
190

In the opposite figure :

$\frac{BE}{EC}$ = ...

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$

(c) $\frac{3}{4}$ (d) $\frac{3}{5}$



2021 Exam (2) Question (36)

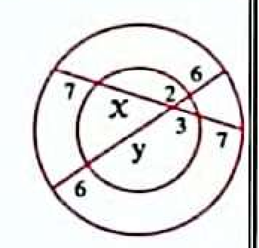
191

In the opposite figure :

(x , y) = ...

(a) (11 , 16.5) (b) (11 , 15.5)

(c) (12 , 16.5) (d) (12 , 15.5)



2021 Exam (3) Question (28)



192

In the opposite figure :

M is a centre of semicircle

, then $x =$ .... cm.

(a) 5 (b) 7 (c) 8 (d) 12

2021 Exam (7) Question (10)

193

In the opposite figure :

If $\overline{AB} \cap \overline{AD} = \{A\}$, ED = 10 cm.

, AC = 9 cm. , CB = 7 cm.

, then the value of $x =$ .... cm.

(a) 5 (b) 6 (c) 7 (d) 8

2021 Exam (6) Question (39)

194

In the opposite figure :

If the length of the radius of a circle of center M is 6 cm.

, CD = 3 cm. , m (∠ A) = m (∠ M) , AM = 6 cm.

, then CB = ... cm.

(a) 3 (b) 4 (c) 5 (d) 6

2021 Exam (6) Question (37)

195

In the opposite figure :

If CD = BM , then the circumference of

the circle M = ... cm.

(a) 15 π (b) 18 π

(c) 20 π (d) 24 π

2021 Exam (4) Question (21)

196

In the opposite figure :

$x =$ .... cm.

(a) 6 (b) 5

(c) 4 (d) 3

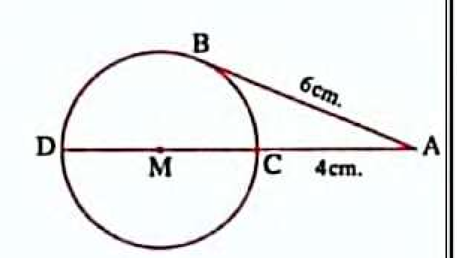
2021 Exam (3) Question (27)

197

In the opposite figure :

If $\overline{AB}$ is a tangent to the circle M

, then area of the circle = …………… cm^2.



(a) 6.25π (b) 62.5π

(c) 25π (d) 10π

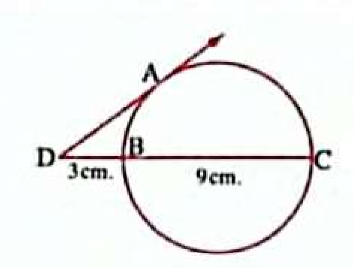
2021 Exam (1) Question (8)

198

In the opposite figure :

$\overrightarrow{DA}$ is a tangent to the circle at A

, then the length of $\overline{AD}$ = …………… cm.



(a) $6\frac{1}{4}$ (b) $8\frac{1}{4}$

(c) 6 (d) 7

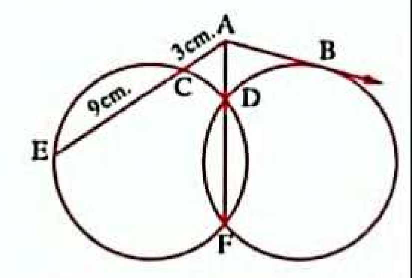
2021 Exam (3) Question (23)

199

In the opposite figure :

If AC = 3 cm. , CE = 9 cm.

, then AB = …………… cm.



(a) 27 (b) 36

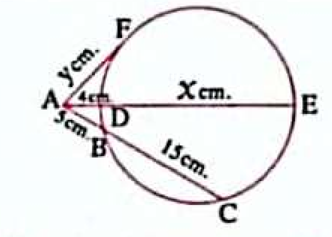
(c) 9 (d) 6

2021 Exam (7) Question (16)

200

In the opposite figure :

$x + y$ = …………… cm.



(a) 9 (b) 18

(c) 22 (d) 31

2021 Exam (2) Question (28)

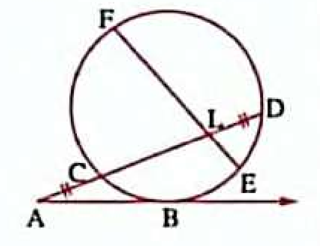
201

In the opposite figure :

$\overrightarrow{AB}$ is a tangent to the circle at B , FL = 10 cm.

, LE = 3.2 cm. , CL = 8 cm. and AB = x cm.

, then x = …………… cm.



(a) 8 (b) 4

(c) 6 (d) 10

2021 Exam (3) Question (26)



202

In the opposite figure :

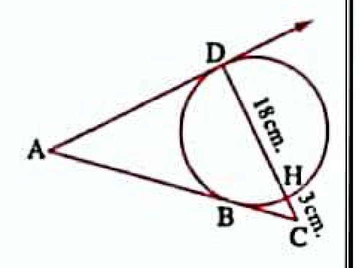
$\overrightarrow{AD}$, $\overrightarrow{AB}$ two tangents at D , B

, $\overrightarrow{CH}$ cuts the circle at H , D

if CH = 3 cm. , HD = 18 cm.

, then AC – AD = ... cm.

(a) $\sqrt{7}$ (b) $2\sqrt{7}$ (c) $3\sqrt{7}$ (d) $6\sqrt{7}$



2021 Exam (4) Question (24)

203

In the opposite figure :

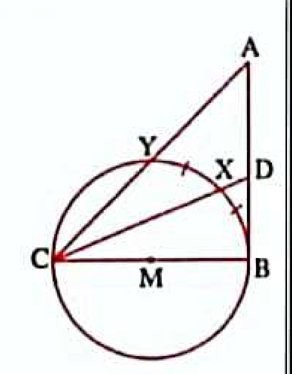
$\overline{AB}$ is a tangent to circle M at B

, m $(\widehat{BX})$ = m $(\widehat{XY})$, BD = $2\sqrt{3}$ cm.

, AD = $4\sqrt{3}$ cm. , then AY = ... cm.

(a) 3 (b) 6

(c) 9 (d) 12



2021 Exam (9) Question (40)

204

In the opposite figure :

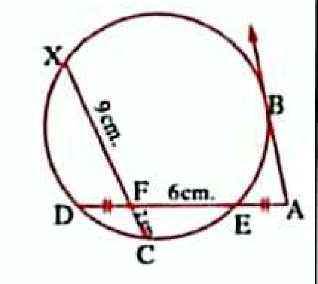
$\overrightarrow{AB}$ is a tangent to the circle at B

, AE = FD , EF = 6 cm. , CF = 2 cm.

, XF = 9 cm. , then AB = ... cm.

(a) 3 (b) 6

(c) 9 (d) 12



2021 Exam (2) Question (24)

205

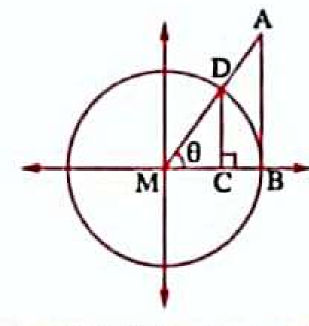
In the opposite figure :

A unit circle M and $\overline{AB}$ is a tangent to the circle at B

, $\overline{CD} \perp \overline{MB}$, then $\frac{AB}{CD}$ = ...

(a) sec θ (b) cos θ

(c) tan θ (d) cosec θ



2021 Exam (5) Question (16)



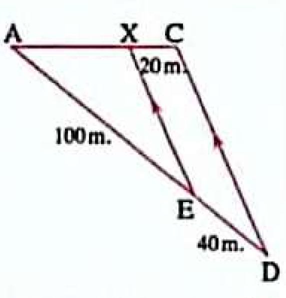
206

In the opposite figure :

The length of $\overline{AX}$ = ... meter.

(a) 60 (b) 50

(c) 40 (d) 30



2021 Exam (10) Question (5)

207

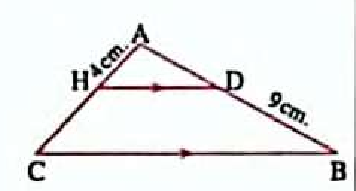
In the opposite figure :

AD = HC , $\overline{DH}$ // $\overline{BC}$, AH = 4 cm. , BD = 9 cm.

, then AC = ... cm.

(a) 4 (b) 9

(c) 10 (d) 13



2021 Exam (1) Question (23)

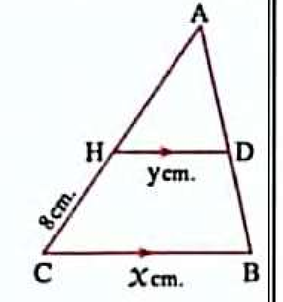
208

In the opposite figure :

If $\frac{x-y}{x+y} = \frac{2}{7}$, then AH = ... cm.

(a) 16 (b) 15

(c) 12 (d) 10



2021 Exam (4) Question (19)

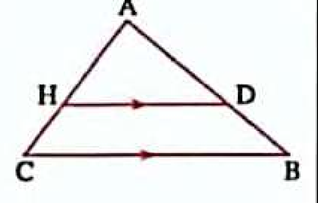
209

In the opposite figure :

$\overline{HD}$ // $\overline{CB}$, $\frac{AD}{BD} = \frac{5}{3}$, then $\frac{AB}{BD}$ = ...

(a) $\frac{3}{5}$ (b) $\frac{8}{3}$

(c) $\frac{3}{8}$ (d) $\frac{5}{8}$



2021 Exam (4) Question (27)

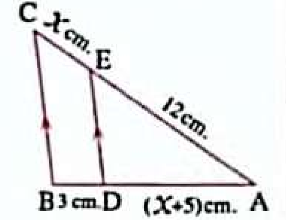
210

In the opposite figure :

If $\overline{DE}$ // $\overline{BC}$, EA = 12 cm. , BD = 3 cm.

, DA = $(x + 5)$ cm. , CE = x cm.

, then the value of x = ... cm.



2021 Exam (6) Question (25)

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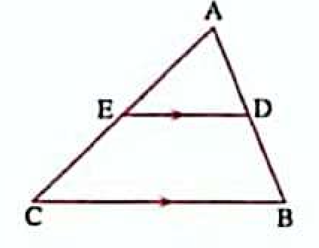
211

In the opposite figure :

All of the following geometrical relations are correct except :

(a) $\frac{AD}{DB} = \frac{AE}{EC}$ (b) $\frac{AD}{DB} = \frac{DE}{BC}$

(c) $\frac{AD}{AB} = \frac{AE}{AC}$ (d) $\frac{BD}{BA} = \frac{CE}{CA}$



2021 Exam (3) Question (37)

212

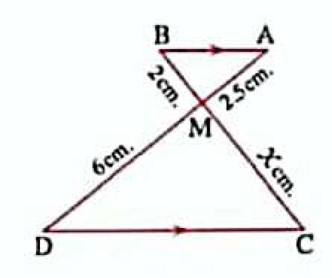
In the opposite figure :

$\overline{AB} \parallel \overline{CD}$, AM = 2.5 cm. , BM = 2 cm. , MD = 6 cm.

, then X = ... cm.

(a) 3.6 (b) 4

(c) 4.2 (d) 4.8



2021 Exam (5) Question (29)

213

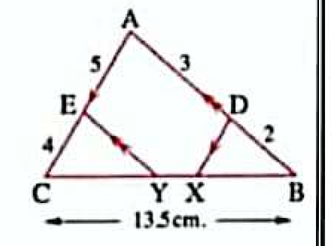
In the opposite figure :

$\overline{DX} \parallel \overline{AC}$, $\overline{EY} \parallel \overline{AB}$, BC = 13.5 cm. , $\frac{AD}{DB} = \frac{3}{2}$ and $\frac{EC}{AE} = \frac{4}{5}$

, then XY = ... cm.

(a) 2.1 (b) 2.3

(c) 2.4 (d) 2.6



2021 Exam (3) Question (30)

214

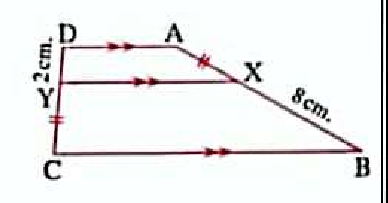
In the opposite figure :

If $\overline{AD} \parallel \overline{XY} \parallel \overline{BC}$, AX = YC , XB = 8 cm.

, DY = 2 cm. , then AX = ... cm.

(a) 2 (b) 4

(c) 16 (d) 8



2021 Exam (8) Question (23)

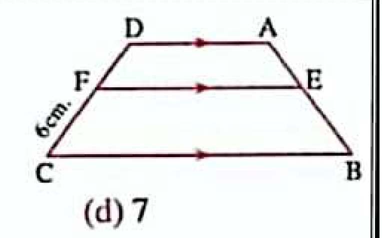
215

In the opposite figure :

$\frac{AE}{EB} = \frac{2}{3}$, FC = 6 cm.

, then DF = ... cm.

(a) 4 (b) 5 (c) 6 (d) 7



2021 Exam (2) Question (34)



216

In the opposite figure :

$\mathcal{X}$ = ... cm.

(a) 6 (b) $3\sqrt{2}$

(c) $3\sqrt{3}$ (d) 18

2021 Exam (7) Question (11)

217

In the opposite figure :

$\mathcal{X} - y$ = ... cm.

(a) 5 (b) 6

(c) 4 (d) 7

2021 Exam (3) Question (31)

218

In the opposite figure :

AB : BC : CD = ...

(a) AE : FC : MD (b) EB : BF : FM

(c) EB : EF : EM (d) EB : BC : CD

2021 Exam (10) Question (8)

219

In the opposite figure :

$\overline{DH} \parallel \overline{ON}$, CN = 5 cm. , OD = 3 cm.

, AD = 6 cm. , AH = 4 cm. , NH = $\mathcal{X}$ cm.

, BO = y cm. , then $\mathcal{X} + y$ = ... cm.

(a) 9.5 (b) 7.5 (c) 8.5 (d) 10

2021 Exam (1) Question (30)

220

The exterior bisector of the vertex of isosceles triangle is .... to the base.

(a) perpendicular (b) bisects (c) parallel (d) equal

2021 Exam (10) Question (11)

221

In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle$ BAC , AB = 6 cm. , AC = 4 cm.

, BC = 8 cm. , then BD = ... cm.

(a) 4.8 (b) 8.4

(c) 3.2 (d) 5

2021 Exam (8) Question (27)

222

In the opposite figure :

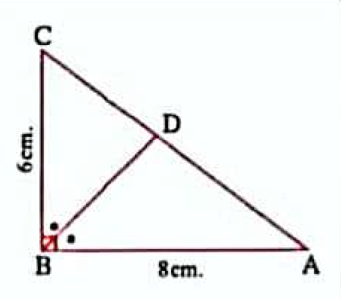
AD = ... cm.

(a) $5\ \frac{5}{7}$

(b) $6\ \frac{3}{4}$

(c) 5

(d) $\frac{4}{3}$



2021 Exam (4) Question (30)

223

In the opposite figure :

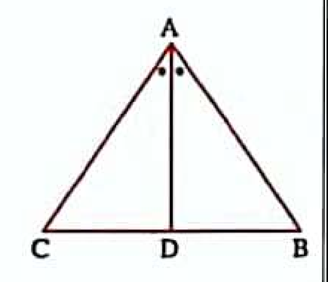
The length of $\overline{AD}$ = ...

(a) $\sqrt{AB \times AC - BD \times DC}$

(b) $(AB)^2 + (AC)^2 - BD \times DC$

(c) $AB + AC - BD \times DC$

(d) $\sqrt{AB \times AC + BD \times DC}$



2021 Exam (10) Question (21)

224

In the opposite figure :

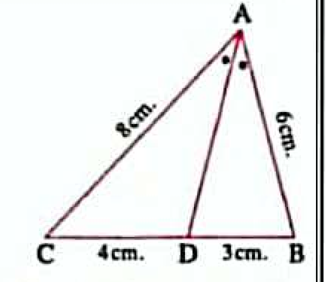
AD = ... cm.

(a) $\sqrt{60}$

(b) 6

(c) 7

(d) $\sqrt{12}$



2021 Exam (2) Question (29)

225

In the opposite figure :

If $\overrightarrow{AD}$ bisects $\angle A$, AB = 15 cm. , AC = 9 cm.

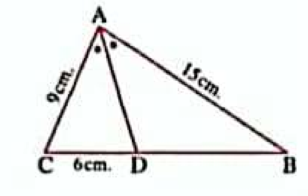
, CD = 6 cm. , then AD = ... cm.

(a) $5\sqrt{3}$

(b) 5

(c) 3

(d) 4



2021 Exam (6) Question (36)

226

In the opposite figure :

BD = 6 cm. , DC = 10 cm. and AC – AB = 6 cm.

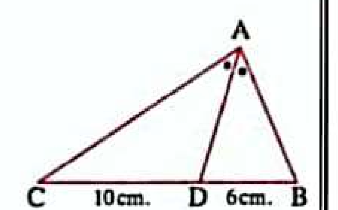
, then AC = ... cm.

(a) 13

(b) 14

(c) 15

(d) 16



2021 Exam (5) Question (17)



227

In the opposite figure :

If $\overrightarrow{AD}$ bisects $\angle A$, $AC = 6$ cm.

, $DC = 4$ cm. , $BD = x$ cm. , $AB = (x + 1)$ cm.

, then $x =$ ....

(a) 3 (b) 4

(c) 2 (d) 1

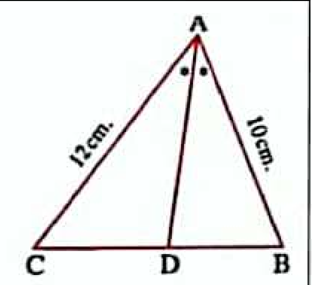
2021 Exam (1) Question (24)

228

In the opposite figure :

ΔABC in which $AB = 10$ cm. , $AC = 12$ cm.

, $\overrightarrow{AD}$ bisects $\angle A$, then BD .... DC



(a) $>$ (b) $<$

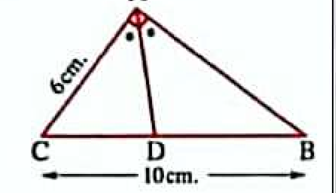
(c) $=$ (d) $\frac{1}{2}$

2021 Exam (1) Question (15)

229

In the opposite figure :

If $\overline{AB} \perp \overline{AC}$, then $\frac{CD}{DB} =$ ....



(a) $\frac{4}{3}$ (b) $\frac{4}{5}$

(c) $\frac{3}{4}$ (d) $\frac{5}{4}$

2021 Exam (10) Question (26)

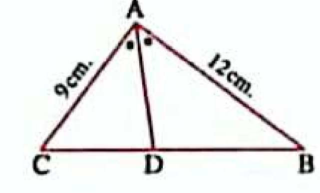
230

In the opposite figure :

If the perimeter of the triangle $ABC = 28$ cm.

, $AB = 12$ cm. , $AC = 9$ cm. , $\overrightarrow{AD}$ bisects $\angle BAC$

, then $BD \times DC =$ .... cm^2.



(a) 9 (b) 12 (c) 7 (d) 16

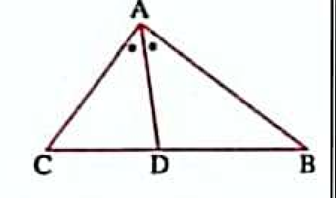
2021 Exam (1) Question (9)

231

In the opposite figure :

If $\overrightarrow{AD}$ bisects $\angle A$

, then $AB \times CD =$ ....



(a) $AC \times BD$ (b) $(AD)^2$ (c) $AD \times BD$ (d) $AC \times AB$

2021 Exam (10) Question (10)



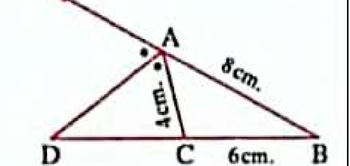
232

In the opposite figure :

DC = ... cm.

(a) 2 (b) 4

(c) 6 (d) 8



2021 Exam (4) Question (13)

233

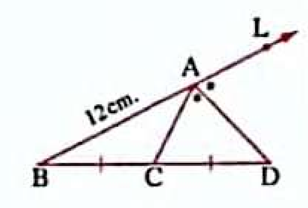
In the opposite figure :

C is the midpoint of $\overline{BD}$, AB = 12 cm. , $\overrightarrow{AD}$ bisects ∠ LAC

, then AC = ... cm.

(a) 3 (b) 4

(c) 6 (d) 8



2021 Exam (5) Question (23)

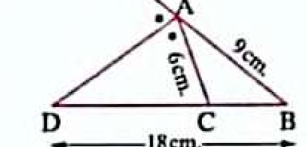
234

In the opposite figure :

AD = ... cm.

(a) $9\sqrt{2}$ (b) 8

(c) $5\sqrt{6}$ (d) $3\sqrt{6}$





2021 Exam (3) Question (32)

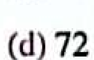
235

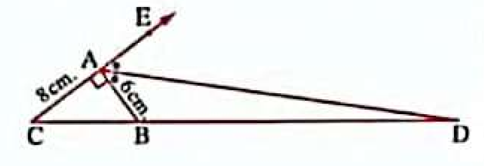
In the opposite figure :

The area of Δ ABD = ... cm^2.

(a) 36 (b) 48

(c) 54 (d) 72





2021 Exam (7) Question (9)

236

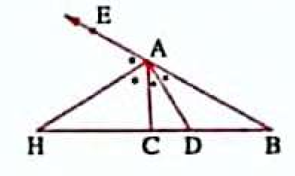
In the opposite figure :

If $\overrightarrow{AD}$ bisects ∠ BAC and $\overrightarrow{AH}$ bisects ∠ EAC

, then $\frac{BD}{DC}$ = ...

(a) $\frac{BH}{HC}$ (b) $\frac{BD}{DH}$

(c) $\frac{AH}{AC}$ (d) $\frac{AB}{AH}$

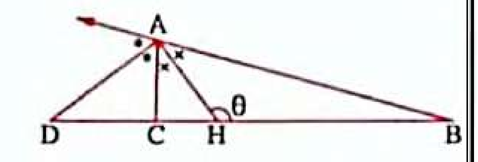


2021 Exam (1) Question (40)

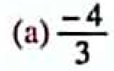


237

In the opposite figure :



AD = 8 cm. , AH = 6 cm. , then tan θ = ...

(a)  $\frac{-4}{3}$

(b) $\frac{-3}{4}$

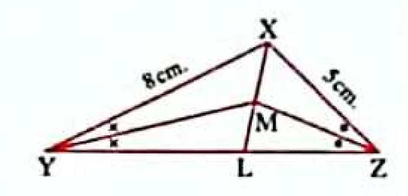
(c) $\frac{3}{4}$

(d) $\frac{4}{3}$

2021 Exam (4) Question (34)

238

In the opposite figure :



8 LZ = ... LY

(a) 5

(b) 3

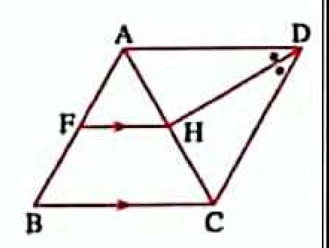
(c) 13

(d) 2

2021 Exam (3) Question (34)

239

In the opposite figure :



$\overrightarrow{DH}$ bisects ∠ D , $\overline{HF}$ // $\overline{CB}$

, then $\frac{AF}{FB}$ = ...

(a) $\frac{HF}{CB}$

(b) $\frac{CH}{HA}$

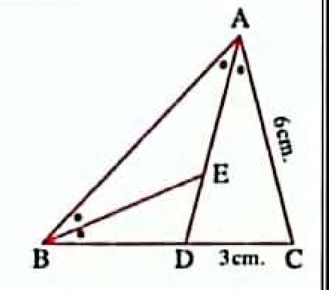
(c) $\frac{CD}{DA}$

(d) $\frac{AD}{DC}$

2021 Exam (1) Question (18)

240

In the opposite figure :



$\frac{AE}{ED}$ = ...

(a) 2

(b) 3

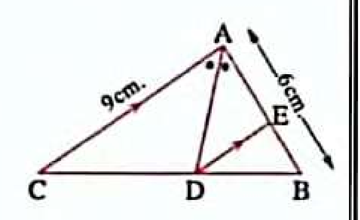
(c) $\frac{2}{3}$

(d) $\frac{1}{2}$

2021 Exam (9) Question (37)

241

In the opposite figure :



$\overrightarrow{AD}$ bisects ∠ BAC , $\overline{ED}$ // $\overline{AC}$, AC = 9 cm.

, AB = 6 cm. , then AE = ... cm.

(a) 3.6

(b) 2.4

(c) 3.2

(d) 5

2021 Exam (6) Question (21)



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242	The diameter of circle M is 6 cm. , P_M (B) = zero , then B lies .... (a) inside the circle. (b) outside the circle. (c) on the circle. (d) at the center of the circle. **2021 Exam (7) Question (17)**
243	If C is a point in the plane of the circle M and P_M (C) = – 8 , then the point C lies .... (a) one the circle. (b) inside the circle (c) outside the circle. (d) on the center of the circle. **2021 Exam (8) Question (29)**
244	If P_M (A) = r , then the point A lies .... the circle. (a) on (b) outside (c) inside (d) on the centre **2021 Exam (9) Question (24)**
245	If AM = 12 cm. , r = 9 cm. , where A is a point outside the circle M , then P_M (A) = ... cm. (a) 65 (b) 63 (c) 49 (d) 7 **2021 Exam (7) Question (4)**
246	If the distance between a point and the centre of a circle equals 10 cm. and the power of this point with respect to the circle equals 64 , then the radius length of this circle equals .... cm. (a) 8 (b) 6 (c) 7 (d) 9 **2021 Exam (6) Question (9)**
247	If P_M (A) = 81 and $\overline{AB}$ is a tangent of the circle M , then AB = ... cm. (a) 18 (b) 9 (c) 6 (d) 36 **2021 Exam (1) Question (34)**
248	If M is a circle with diameter length 12 cm. , A is a point in its plane and the power of the point A with respect to the circle M equals 13 cm. , then MA = ... cm. (a) 7 (b) 14 (c) 3.5 (d) 6 **2021 Exam (4) Question (36)**
249	If A is a point in the plane of circle M and MA = 6 cm. and P_M (A) = – 13 , then the area of the circle M = ... cm^2 , $\left(\pi = \frac{22}{7}\right)$ (a) 154 (b) 44 (c) 144 (d) 7 **2021 Exam (4) Question (38)**

250

In the opposite figure :

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents to the circle

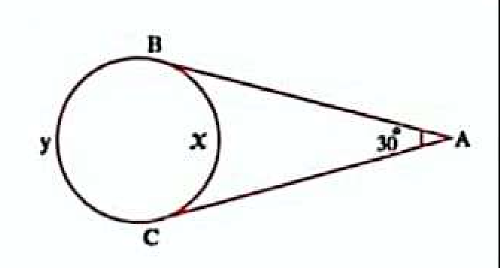
, m (∠ A) = 30° , then y – x = ... rad

(a) π

(b) $\frac{\pi}{2}$

(c) $\frac{\pi}{3}$

(d) 2π



2021 Exam (1) Question (19)

251

In the opposite figure :

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents of the circle

, m (∠ A) = 40° , m ($\widehat{BDC}$) = 4 x°

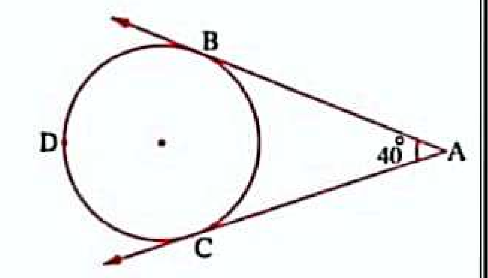
, then value of x = ...°

(a) 110

(b) 55

(c) 25

(d) 50



2021 Exam (9) Question (23)

252

In the opposite figure :

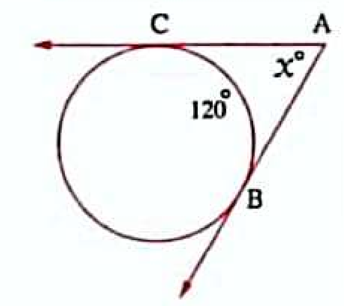
If m ($\widehat{BC}$) = 120° , then x = ...°

(a) 80

(b) 60

(c) 240

(d) 120



2021 Exam (10) Question (14)

253

In the opposite figure :

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents to the circle

, m (∠ ABC) = 50° , then the measure

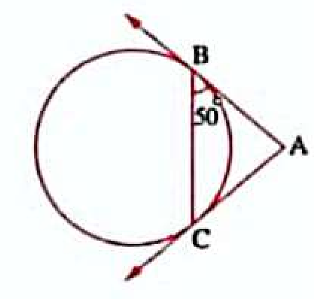
of the major ($\widehat{BC}$) = ...°

(a) 200

(b) 260

(c) 160

(d) 80



2021 Exam (1) Question (25)



254

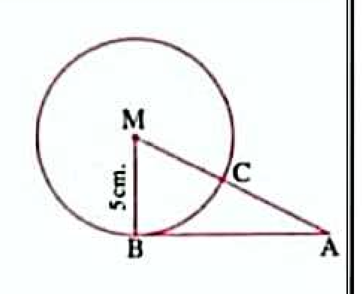
In the opposite figure :

If $P_M(A) = 144$, BM = 5 cm.

, then AC = ... cm.

(a) 18 (b) 8

(c) 12 (d) 16



2021 Exam (1) Question (35)

255

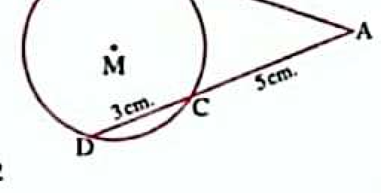
In the opposite figure :

$\overline{AB}$ is a tangent to the circle at B , DC = 3 cm.

, CA = 5 cm. , then $P_M(A) =$ ....

(a) 25 (b) $(AB)^2 - r^2$

(c) 40 (d) $(AM)^2 - (AB)^2$



2021 Exam (5) Question (27)

256

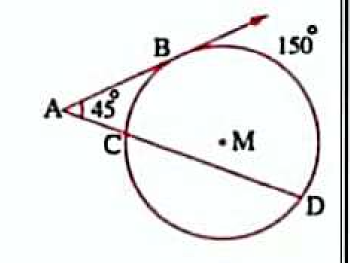
In the opposite figure :

$\overrightarrow{AB}$ is a tangent to the circle M at B , m (∠ A) = 45°

, m $(\overset{\frown}{BD}) = 150°$, then m $(\overset{\frown}{BC}) =$ ....°

(a) 120 (b) 90

(c) 60 (d) 180



2021 Exam (5) Question (21)

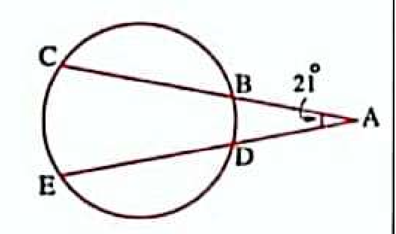
257

In the opposite figure :

m (∠ A) = 21° , then m $(\overset{\frown}{CE})$ – m $(\overset{\frown}{BD}) =$ ....°

(a) 41 (b) 21

(c) 42 (d) 44



2021 Exam (8) Question (25)

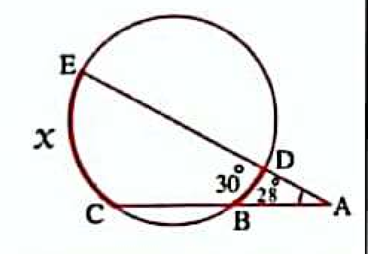
258

In the opposite figure :

$x =$ ....

(a) 30° (b) 60°

(c) 86° (d) 26°



2021 Exam (7) Question (8)



259

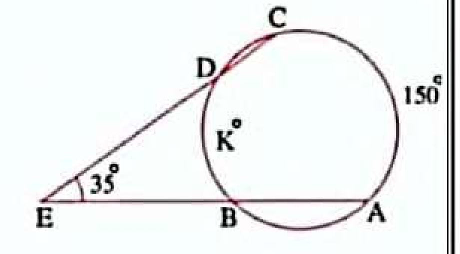
In the opposite figure :

If $\overline{AE} \cap \overline{CE} = \{E\}$, m (∠ E) = 35°

, then K = ……………°

(a) 100 (b) 60

(c) 80 (d) 90



2021 Exam (6) Question (12)

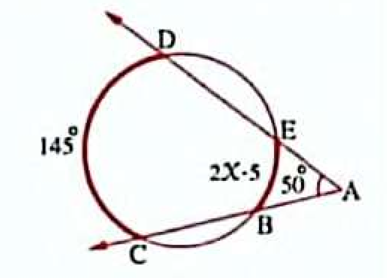
260

In the opposite figure :

x = ……………°

(a) 50 (b) 70

(c) 100 (d) 25



2021 Exam (2) Question (40)

261

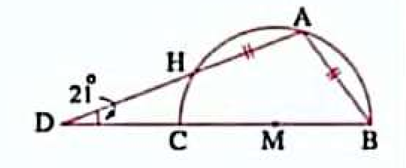
In the opposite figure :

$\overline{BC}$ is a diameter in circle M , m (∠ D) = 21°

, AB = AH , then (∠ A) = ……………

(a) 100° (b) 104°

(c) 106° (d) 110°



2021 Exam (4) Question (40)

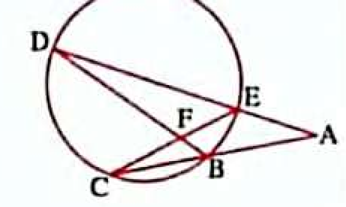
262

In the opposite figure :

m (∠ DFC) + m (∠ A) = ……………

(a) m ($\overset{\frown}{DC}$) (b) 2 m ($\overset{\frown}{DC}$)

(c) m ($\overset{\frown}{EB}$) (d) 2 m ($\overset{\frown}{EB}$)



2021 Exam (3) Question (39)

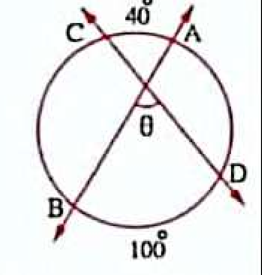
263

In the opposite figure :

θ = ……………°

(a) 50 (b) 60

(c) 70 (d) 140



2021 Exam (4) Question (37)



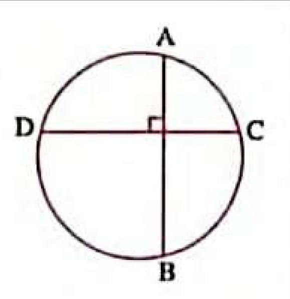
264

In the opposite figure :

If $\overline{AB} \perp \overline{DC}$, then m $(\overset{\frown}{AC})$ + m $(\overset{\frown}{BD})$ = ...

(a) 45° (b) 90°

(c) 180° (d) 270°



2021 Exam (5) Question (30)

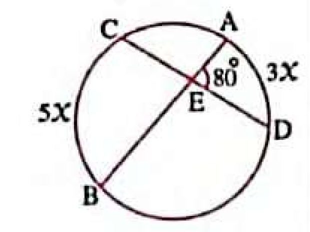
265

In the opposite figure :

x = ...°

(a) 10 (b) 20

(c) 30 (d) 40



2021 Exam (7) Question (13)



Solutions

1	C	21	D	41	B	61	A	81	B
2	A	22	D	42	A	62	C	82	B
3	C	23	C	43	D	63	B	83	D
4	C	24	B	44	A	64	C	84	D
5	D	25	C	45	C	65	A	85	D
6	A	26	D	46	D	66	C	86	B
7	A	27	A	47	C	67	D	87	D
8	C	28	C	48	B	68	C	88	D
9	C	29	C	49	A	69	C	89	D
10	C	30	C	50	B	70	C	90	C
11	D	31	A	51	C	71	D	91	B
12	B	32	C	52	B	72	D	92	D
13	C	33	C	53	A	73	B	93	B
14	A	34	C	54	B	74	A	94	B
15	A	35	B	55	B	75	B	95	D
16	A	36	A	56	C	76	B	96	B
17	D	37	B	57	B	77	A	97	D
18	A	38	D	58	B	78	A	98	B
19	C	39	D	59	D	79	B	99	D
20	B	40	C	60	C	80	A	100	A

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
101	A	121	D	141	C	161	D	181	A
102	A	122	B	142	B	162	A	182	B
103	C	123	A	143	D	163	A	183	D
104	B	124	A	144	A	164	A	184	C
105	B	125	D	145	C	165	C	185	C
106	C	126	D	146	C	166	A	186	C
107	C	127	D	147	D	167	B	187	B
108	A	128	D	148	B	168	C	188	A
109	A	129	D	149	A	169	C	189	A
110	B	130	D	150	D	170	D	190	A
111	C	131	B	151	C	171	A	191	A
112	D	132	A	152	A	172	D	192	A
113	C	133	C	153	C	173	C	193	D
114	B	134	C	154	D	174	B	194	C
115	A	135	A	155	C	175	B	195	C
116	B	136	A	156	D	176	C	196	C
117	A	137	A	157	D	177	C	197	A
118	B	138	A	158	D	178	B	198	C
119	A	139	B	159	D	179	A	199	D
120	B	140	A	160	D	180	A	200	D

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موقع مذكرات جاهزة للطباعة

201	A	221	A	241	B	261	C		
202	C	222	A	242	C	262	A		
203	C	223	A	243	B	263	C		
204	B	224	B	244	B	264	C		
205	C	225	A	245	B	265	B		
206	B	226	C	246	B				
207	C	227	C	247	B				
208	D	228	B	248	A				
209	B	229	C	249	A				
210	D	230	B	250	C				
211	B	231	A	251	B				
212	D	232	C	252	B				
213	A	233	C	253	B				
214	D	234	A	254	B				
215	A	235	D	255	C				
216	B	236	A	256	C				
217	A	237	A	257	C				
218	B	238	A	258	C				
219	A	239	D	259	C				
220	C	240	A	260	D				



حمل الان

مجانا وحصريا

المراجعة رقم (3)







Choose the correct answer from the given ones:

(1) The simplest form of the imaginary number i^{42} is ……….

a) 1 b) – 1 c) i d) – i

ans. $i^{42} = i^{4\times10+2} = i^2 = -1$ **(b)**

(2) If L, 2-L are the roots of the equation: $x^2 + k\,x + 6 = 0$, then $k =$…

a) 1 b) – 3 c) – 2 d) 5

ans. **S.R**

$$\mathbf{L + 2 - L = \frac{-k}{1} \rightarrow 2 = -k \rightarrow -2 = k} \quad \textbf{(c)}$$

(3) The exterior bisector at the vertex of an isosceles triangle ……….. to the base.

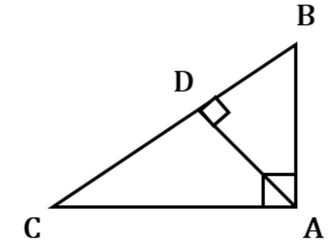
a) parallel b) perpendicular c) bisects d) equal

ans. **parallel (a)**

(4) ΔABC is a right – angled triangle at A , $\overline{AD} \perp \overline{BC}$ to intersect it at d then $AB^2 =$……

a) BD × DC b) BD × BC c) CD × CB d) AB × AC

ans. $(AB)^2 = BD \times BC$ **(b)**



(5) If $\tan(180° + \theta) = 1$ where θ is the measure of the smallest positive angle then $\theta =$ ……..

a) 60° b) 30° c) 45° d) 135°

ans. $\mathbf{tan(180+\theta)=1 \rightarrow}$ **1st quad.**

$\mathbf{180+\theta=45+180 \rightarrow \theta=45^\circ}$ **(c)**

(6) The solutions set $x(x-1)=0$ in R is …

a) {0} b) {1} c) {1, -1} d) {1. 0}

ans. $\boldsymbol{x(x-1)=0}$

$\boldsymbol{x=0, x-1=0 \rightarrow x=1}$

$\mathbf{\{0,+1\}}$ **(d)**

(7) If L ,M are the two roots of the equation : : $x^2+3x-4=0$ then LM=…….

a) 4 b) – 4 c) 3 d) – 3

ans. $\mathbf{LM=\frac{-4}{1}=-4}$ **(b)**

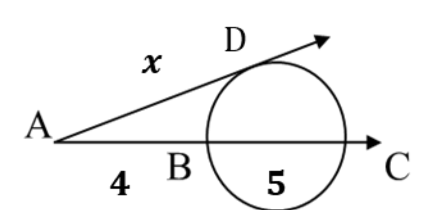
(8) If the ratio between the perimeters of two similar polygons 4 : 9 then the ratio between their two surface areas equals ……

a) 1:2 b) 2:3 c) 16:81 d) 8:18

ans. $\mathbf{\left(\frac{4}{9}\right)^2=\frac{16}{81}}$ **(c)**

(9) In the opposite figure:

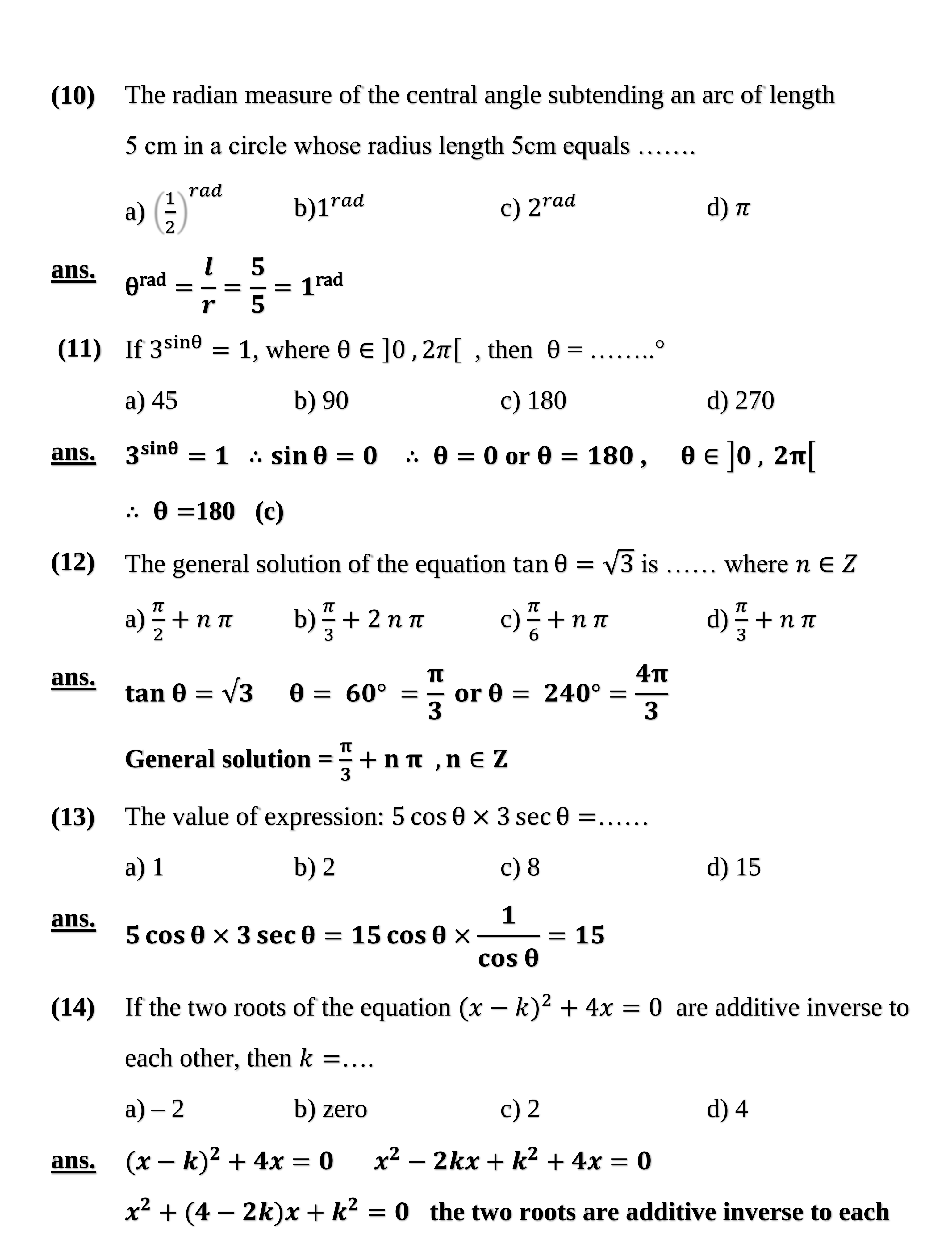
$x=\cdots$



a) $2\sqrt{5}$ b) 36 c) 20 d) 6

ans. $\boldsymbol{x^2=\mathrm{AB}\times\mathrm{AC}=4\times9=36}$

$\boldsymbol{x=\sqrt{36}=6}$ **(d)**



(10) The radian measure of the central angle subtending an arc of length 5 cm in a circle whose radius length 5cm equals …….

a) $\left(\frac{1}{2}\right)^{rad}$ b) 1^{rad} c) 2^{rad} d) π

ans. $\theta^{rad} = \frac{l}{r} = \frac{5}{5} = 1^{rad}$

(11) If $3^{\sin\theta} = 1$, where $\theta \in]0, 2\pi[$, then $\theta = \ldots\ldots..°$

a) 45 b) 90 c) 180 d) 270

ans. $3^{\sin\theta} = 1 \quad \therefore \sin\theta = 0 \quad \therefore \theta = 0$ **or** $\theta = 180 , \quad \theta \in]0, 2\pi[$

$\therefore \theta = 180$ **(c)**

(12) The general solution of the equation $\tan\theta = \sqrt{3}$ is …… where $n \in Z$

a) $\frac{\pi}{2} + n\pi$ b) $\frac{\pi}{3} + 2n\pi$ c) $\frac{\pi}{6} + n\pi$ d) $\frac{\pi}{3} + n\pi$

ans. $\tan\theta = \sqrt{3} \quad \theta = 60° = \frac{\pi}{3}$ **or** $\theta = 240° = \frac{4\pi}{3}$

General solution $= \frac{\pi}{3} + n\pi \ , n \in Z$

(13) The value of expression: $5\cos\theta \times 3\sec\theta = \ldots\ldots$

a) 1 b) 2 c) 8 d) 15

ans. $5\cos\theta \times 3\sec\theta = 15\cos\theta \times \frac{1}{\cos\theta} = 15$

(14) If the two roots of the equation $(x-k)^2 + 4x = 0$ are additive inverse to each other, then $k = \ldots.$

a) – 2 b) zero c) 2 d) 4

ans. $(x-k)^2 + 4x = 0 \qquad x^2 - 2kx + k^2 + 4x = 0$

$x^2 + (4-2k)x + k^2 = 0$ **the two roots are additive inverse to each**

(15) If the sign of $f(x) = kx - 10$ is positive on the interval $]5, \infty[$ and negative on the interval $]-\infty, 5[$ then $k = \ldots\ldots$

a) 5 b) – 2 c) 2 d) – 10

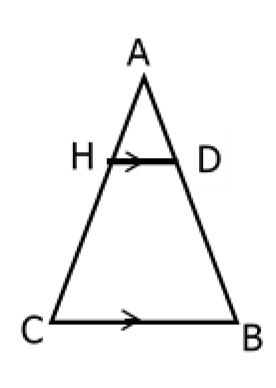
ans. **at x=5 ∴ kx − 10 =0 ∴ 5k -10=0 ∴ k=2**

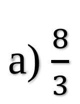
(16) The angle whose measure is 490º lies in the ………. quad.

a) first b) second c) third d) fourth

ans. **490° – 360° =130°, 90°<130°<180° ∴the lies in the second quadrant**

(17) In the opposite figure $\overline{DH} \parallel \overline{BC}$, $\frac{DH}{BC} = \frac{3}{8}$, then $AD : DB = \cdots$





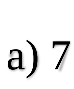
a) $\frac{8}{3}$ b) $\frac{5}{3}$

c) $\frac{3}{5}$ d) $\frac{11}{8}$

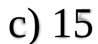
ans. $\overline{\mathbf{DH}} \parallel \overline{\mathbf{BC}}$ **∴ ΔADH ~ΔABC,**

$$\frac{AD}{AB} = \frac{DH}{BC} = \frac{3}{8} \therefore \frac{AD}{AB - AD} = \frac{3}{8 - 3} \therefore \frac{AD}{DB} = \frac{3}{5}$$

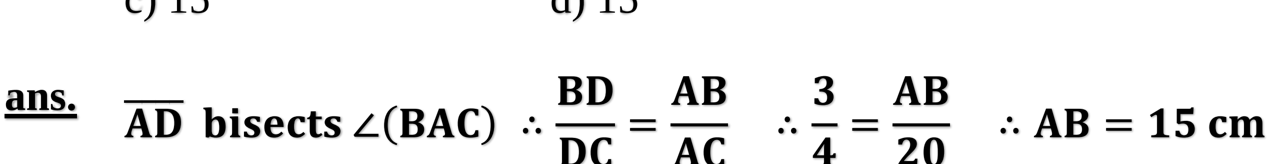
(18) In the opposite figure, If $\overline{AD}$ bisects $\angle(BAC)$, $AC = 20$ cm, $BD = 3$ cm, $DC = 4$ cm, then $x = \ldots\ldots.\ cm.$



a) 7 b) 3



c) 15 d) 15



ans. $\overline{\mathbf{AD}}$ **bisects** $\angle(\mathbf{BAC}) \therefore \frac{BD}{DC} = \frac{AB}{AC} \therefore \frac{3}{4} = \frac{AB}{20} \therefore AB = 15$ **cm**

(19) If one of the roots of the equation $mx^2 - 3x + 1 = 0$ is multiplicative inverse of the other, then $m =$ ……

a) – 3　　b) – 1　　c) 1　　d) 2

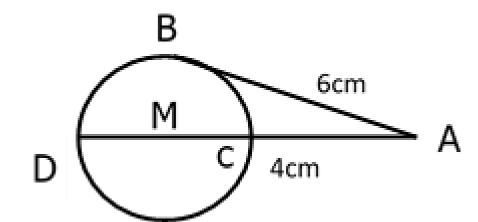
ans. **The roots of the equation are multiplicative inverse of each other, then product of the roots = 1 ∴ $\frac{1}{m}$ =1 ∴ m= 1**

(20) The function which has a positive sign in R~{2} is $f(x) =$………

a)$(x-2)(x+2)$　b) $x^2 - 4x + 4$　c) $x - 2$　d) $(x+2)$

ans. **in R − {2} means that the function is quadratic and has only one root , only $f(x) = x^2 - 4x + 4$ (b) from the alternatives satisfies**

(21) In the opposite figure if $\overline{AB}$ is a tangent to the circle M whose area …….. cm^2



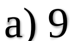
a) 6.25π　　b) 62.5π

c) 25π　　d) 10π

ans. **$\overline{AB}$ is a tangent ∴ $(AB)^2$ = BC ×BD ∴ 36= 4 ×(4 + 2r)**

∴ r = 2.5 cm, area of the circle = $\pi r^2 = \pi(2.5)^2$ = 6.25 π cm^2

(22) In the opposite figure, If the perimeter of the triangle ABC = 28 cm, AB = 12 cm, AC = 9 cm, $\overline{AD}$ bisects ∠(BAC), then BD × DC =……



a) 9　　b) 12　　c) 7　　d) 16

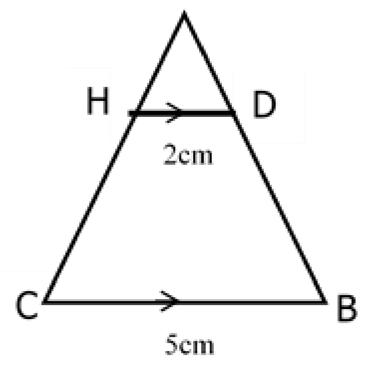
ans. **CB=28-(9+12)=7 cm, AD bisects ∠A, then $\frac{BD}{DC} = \frac{AB}{AC}$,**

then $\frac{BD}{DC} = \frac{12}{9}$, $\frac{BD}{DC + BD} = \frac{12}{9 + 12}$, $\frac{BD}{BC} = \frac{12}{21}$, $\frac{BD}{7} = \frac{12}{21}$

∴ **BD= 4 cm ,DC=3 cm** ∴ **BD × DC=12**

(23) In the opposite figure, If the area of triangle (ADH) $= 24 \text{ cm}^2$,

$\overline{DH}$ // $\overline{BC}$ then the area of the shape DBCH =……. cm^2



a) 36 b) 126

c) 136 d) 100

ans. $\overline{HD}$ **//** $\overline{CB}$ **then** $\Delta ADH \sim \Delta ABC$ ∴ $\frac{a.\Delta ADH}{a.\Delta ABC} = (\frac{DH}{BC})^2$

∴ $\frac{24}{a.\Delta ABC} = (\frac{2}{5})^2$ ∴ $\frac{24}{a.\Delta ABC} = \frac{4}{25}$ ∴ $a.\Delta ABC = 150 \text{ cm}^2$

∴ **area of DCBH = 150- 24=126** cm^2

(24) The central angle with measure 120° and includes an arc with length L cm in a circle with radius 6 cm, then L ≃… cm.

a) 12.57 b) 10 c) 125.4 d) 1.254

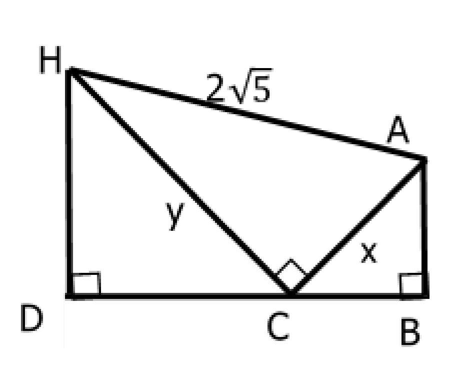
ans. $\theta^{rad} = \frac{120}{180}\pi \simeq$, $\theta^{rad} = \frac{L}{r}$ ∴ $L = r\theta^{rad} = (6)(\square) \simeq 12.57\ cm.$

(25) If the terminal side of the angle θ in its standard position, cuts the unit circle at point $(\frac{3}{5}, y)$ where $y > 0$, then $\tan(\theta) = \ldots\ldots$

a) $\frac{4}{3}$ b) $\frac{3}{4}$ c) $\frac{5}{4}$ d) 1

ans. $\left(\frac{3}{5}\right)^2 + (y)^2 = 1$ ∴ $y^2 = \frac{16}{25}$, $y > 0$ ∴ $y = \frac{4}{5}$ ∴ $\tan\theta = \frac{y}{x} = \frac{4}{3}$

(26) In the opposite figure, Δ ABC ~ Δ CDH,



BC $= \frac{1}{2}$ DH, then $x \times y =$.......

a) 3 b) 6

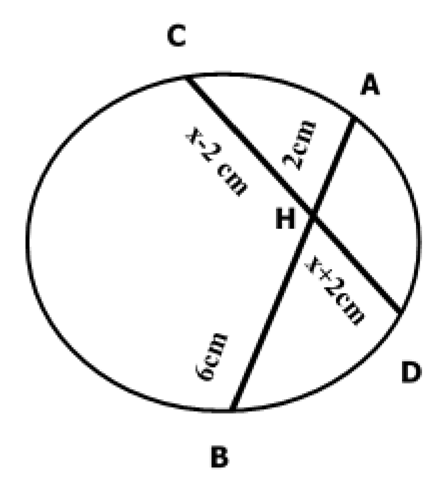
c) 8 d) 10

ans. $\mathbf{\Delta\ ABC \sim \Delta\ CDH \therefore \frac{AB}{CD} = \frac{BC}{DH} = \frac{AC}{CH}\ ,\ BC = \frac{1}{2} DH \therefore \frac{BC}{DH} = \frac{1}{2} \therefore \frac{AB}{CD} = \frac{1}{2} = \frac{x}{y}}$

$\mathbf{\therefore y = 2x\ ,\ in\ \Delta\ ACH\quad x^2 + y^2 = \left(2\sqrt{5}\right)^2 \therefore 5x^2 = 20}$

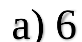
$\mathbf{\therefore x = 2, y = 4, xy = 8}$

(27) In the opposite figure, AH $=$ 2cm,



BH $=$ 6cm, DH $=$ (x + 2) cm, HC $=$ (x − 2)cm,

then $x =$...... cm.



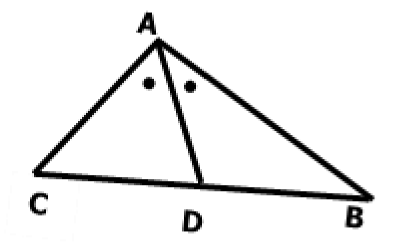
a) 6 b) 2

c) 4 d) 10

ans. $\mathbf{2 \times 6 = HC \times HD\ \therefore HA \times HB = (x + 2) \times (x - 2) \therefore 2 \times 6 = x^2 - 4}$

$\mathbf{\therefore x^2 = 16 \therefore x = 4\ cm}$

(28) In the opposite figure, Δ ABC in which



AB $=$ 12 cm, AC $=$ 10 cm,

$\overline{AD}$ bisects angle ($\angle$A) $=$ then BD...... DC.

a) > b) < c) = d) $\frac{1}{2}$

ans. $\mathbf{\frac{BD}{DC} = \frac{AB}{AC} = \frac{12}{10} > 1,\ then\ BD > DC}$

(29) If $\sin(A + 15) = \cos(A + 25)$ where, $0 < A < 90°$, then A =…°

a)15 b) 25 c) 40 d)10

<u>ans.</u> $\mathbf{\sin(A + 15) = \cos(A + 25) \therefore (A + 15) + (A + 25) = 90}$

$\mathbf{\therefore 2A + 40 = 90 \therefore A = 25°}$

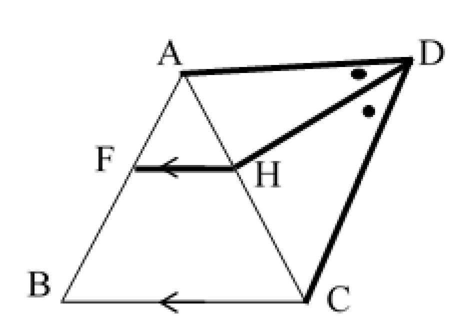
(30) tan 497°=……

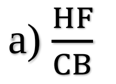
a) 1 b) – 1 c) $\frac{\sqrt{2}}{2}$ d) $\frac{1}{2}$

<u>ans.</u> **tan 495°=tan(495 − 360°)=tan 135°=-tan 45°= -1**

(31) In the opposite figure $\overline{DH}$ bisects (∠D),

$\overline{HF}$ // $\overline{CB}$, then $\frac{AF}{FB}$ =……





b) $\frac{CH}{HA}$

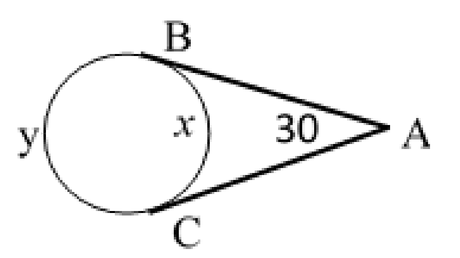
c) $\frac{CD}{DA}$ d) $\frac{AD}{DC}$

<u>ans.</u> **In Δ ABC, $\overline{HF}$ // $\overline{CB}$ ∴ $\frac{AF}{FB} = \frac{AH}{HC}$ ……(1) ,In Δ ADC, $\overline{DH}$ bisects**

(∠D) ∴ $\frac{AH}{HC} = \frac{AD}{DC}$………(2) , from (1),(2) ∴ $\frac{AF}{FB} = \frac{AD}{DC}$

(32) In the opposite figure $\overline{AB}$, $\overline{AC}$ are two tangents to the circle.

m(∠A) = 30°, Then $y - x$ =…… rad

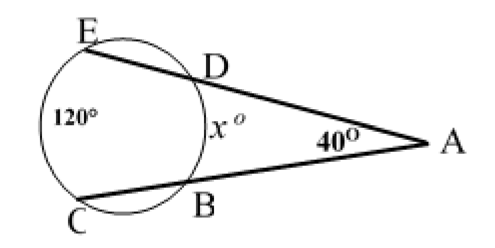


a) π b) $\frac{\pi}{2}$ c) $\frac{\pi}{3}$ d) 2π

<u>ans.</u> **y – x = 60° = $\frac{\pi}{3}^{rad}$**

(33) In the opposite figure $m(\angle A) = 40°$,

$m(\widehat{EC}) = 120°$ then $x = ...°$



a) 40 b) 60

c) 120 d) 170

ans. **120° - x°= 80°** **∴ x= 40°**

(34) If L & M are two roots of the equation $x^2 - x - 2 = 0$ where L > M, then $2L + 5M^2 = ...$

a) 10 b) 5 c) 9 d) 11

ans. $\boldsymbol{x^2 - x - 2 = 0 \therefore (x+1)(x-2) = 0 \therefore \textit{the two roots are } -1 , 2}$

, $\boldsymbol{L > m}$ **∴ L = 2 , m = - 1∴** $\boldsymbol{2L + 5M^2 = 2(2) + 5(-1)^2 = 9}$

(35) If $\sin(\theta) = \frac{3}{5}$ where θ is a positive acute angle, then $\sin(180° + \theta) - \cos(360° - \theta) + \sin(90° + \theta) = ...$

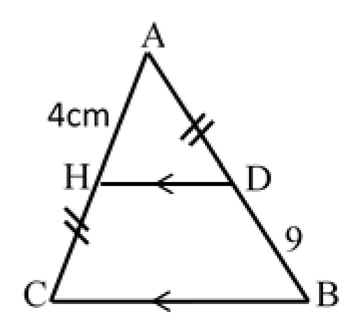
a) $\frac{4}{5}$ b) $\frac{5}{4}$ c) $-\frac{3}{5}$ d) zero

ans. $\boldsymbol{\sin(180° + \theta) - \cos(360° - \theta) + \sin(90° + \theta)}$

$\boldsymbol{= -\sin(\theta) - \cos(\theta) + \cos(\theta) = -\sin(\theta) = -\frac{3}{5}}$

(36) In the opposite figure AD = HC,

$\overline{DH}$ // $\overline{BC}$, AH = 4cm, BD = 9cm, then AC =...... cm.



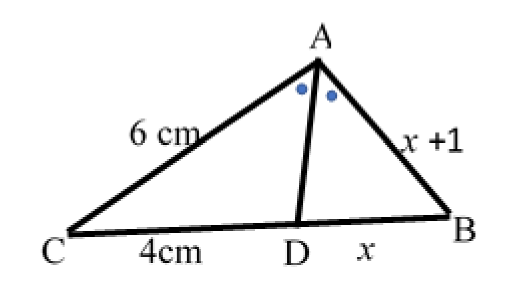
a) 4 b) 9

c) 10 d) 13

ans. **In Δ ABC,** $\boldsymbol{\overline{HD}}$ **//** $\boldsymbol{\overline{CB}}$ **∴** $\boldsymbol{\frac{AH}{HC} = \frac{AD}{DB} \therefore \frac{4}{HC} = \frac{HC}{9}}$ **∴ HC= 6 cm**

∴ AC = 4+6=10 cm

(37) In the opposite figure if $\overline{AD}$ bisects angle (A), $AC = 6cm, DC = 4cm, BD = x$, $AB = x + 1$, then $x =$……



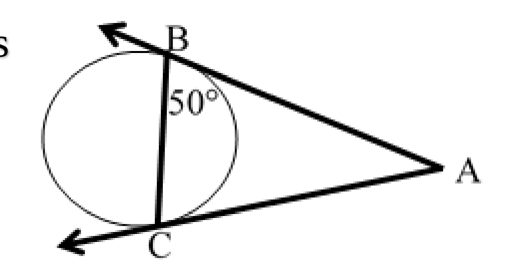
a) 3 b) 4

c) 2 d) 1

<u>**ans.**</u> **In Δ ABC, $\overline{AD}$ bisects ∠A ∴ $\frac{BD}{DC} = \frac{BA}{CA}$ ∴ $\frac{x}{4} = \frac{x+1}{6}$ ∴ 6x = 4x + 4**

∴ 2x = 4 ∴ x = 2

(38) In the opposite figure $\overrightarrow{AB}, \overrightarrow{AC}$ are two tangents to the circle. $m(\angle ABC) = 50°$ then the measure of the greatest arc $\overset{\frown}{BC}$ =……°



a) 200 b) 260 c) 160 d) 80

<u>**ans.**</u> **Im(∠ABC)=50° ∴ measure of arc BC =100°**

measure of greatest aecarc BC =360° - 100°= 260°

(39) If θ is a positive acute angle, $\frac{\sin(\theta+10)}{\cos(40)} = 1$, then $\theta = \ldots°$

a) 40 b) 50 c) 10 d) 70

<u>**ans.**</u> **$\frac{\sin(\theta+10)}{\cos(40)} = 1$ ∴ $\sin(\theta + 10) = \cos(40)$ ∴ θ + 10+40=90∴ θ = 40°**

(40) If (3 + i) is one of the roots of the equation $x^2 + kx + 10 = 0$ where the coefficient of its terms are real numbers, then $k =$……

a) 6 b) – 6 c) 9 d) – 9

<u>**ans.**</u> **(3 + i) is one of the roots of the equation , then the other root is(3 + i) ∴ sum of the roots = - k ∴ 3+i + 3 – i = -k ∴ k= - 6**

(41) If L & M are the roots of the equation $x^2 - 3x = -5$, then the equation with roots $\mathrm{L} + 1$ & $\mathrm{M} + 1$ is ……

a) $x^2 - 9x + 5 = 0$ b) $x^2 - 5x + 9 = 0$

c) $x^2 - 5x - 3 = 0$ d) $x^2 + 3x + 5 = 0$

ans. $\boldsymbol{x^2 - 3x + 5 = 0 \rightarrow a = 1 , b = -3, c = 5}$

$\mathbf{L+M} = \frac{-b}{2} = \frac{-(-3)}{1} = 3 \text{ , L M} = \frac{c}{a} = \frac{5}{1} \Longrightarrow \text{L M} = 5$

Sum of the two roots = (L+1) + (M+1) = L + M + 2 = 3 + 2 = 5

Product of the two roots = (L+1)(M+1) = L M + (L+M) + 1

= 5 + 3 + 1 = 9, the equation is $\boxed{x^2 - 5x + 9 = 0}$

(42) Two similar polygons, the ratio between their areas is 4 : 25 then the ratio between their perimeter is….

a) 2 : 5 b) 5 : 2 c) 4 : 5 d) 8 : 50

ans. $\because$ **The ratio between their areas** $= \frac{4}{25}$

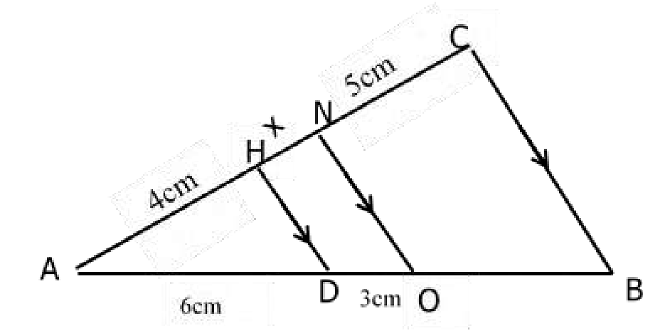
$\therefore$ **the ratio between their perimeters** $= \sqrt{\frac{4}{25}} = \frac{2}{5}$

(43) In the opposite figure , $\overline{DH} \mathbin{/\!/} \overline{ON}$,

$\mathrm{CN} = 5\mathrm{cm}, \mathrm{OD} = 3\mathrm{cm}$,

$\mathrm{AD} = 6\mathrm{cm}, \mathrm{AH} = 4\mathrm{cm}, \mathrm{NH} = x$,

$\mathrm{BO} = y$, then $x + y =$…… cm.



a) 9.5 b) 7.5 c) 8.5 d) 10

ans. **In Δ ABC**

$\because \overline{DH} // \overline{ON} // \overline{BC} \quad \therefore \frac{AH}{AD} = \frac{HN}{DO} = \frac{NC}{OB}$

$\Rightarrow \frac{4}{6} = \frac{x}{3} = \frac{5}{y} \quad , x = \frac{3 \times 4}{6} = 2 \text{ cm}, y = \frac{5 \times 6}{4} = 7.5 \text{ cm}$

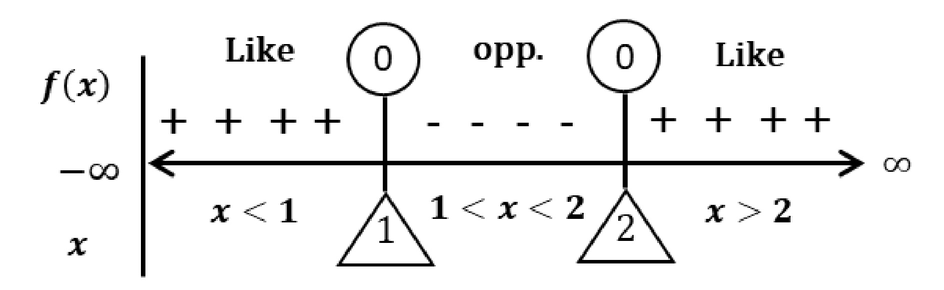
$x + y = 2 + 7.5 = 9.5 \text{ cm}$

(44) The solution set of the inequality $x^2 - 3x + 2 \geq 0$ is ……

a) $[1, 2]$ b) $R -]-2, -1[$ c) $R -]1, 2[$ d) $[-2, -1]$

ans. **Let** $f(x) = x^2 - 3x + 2 = 0 \Rightarrow (x - 2)(x - 1) = 0$

$\Rightarrow x = 2$ **or** $x = 1$



from the number line

the S.S> of the inequality $x^2 - 3x + 2 \geq 0$ **is** $R -]1, 2[$

(45) If $(2 + i)(3 - 5i^5) = (x + iy)$, then $x + y =$…….

a) 4 b) 5 c) 6 d) 7

ans. $\because (2 + i)(3 - 5i^5) = (2 + i)(3 - 5i)$

$= 6 - 7i - 5i^2 = 6 - 7i + 5 = 11 - 7i \Rightarrow \therefore x = 11, y = -7$

$x + y = 11 + (-7) = 4$

(46) If the roots of the equation $2x^2 - 8x + K = 0$ are equal real, then $K =$……

a) 2 b) 4 c) 10 d) 8

ans. $\because$ **the two roots are equal** $\therefore \boldsymbol{b^2 - 4ac = 0}$

$$(-8)^2 - 4(2)(K) = 0$$

$$64 - 8K = 0$$

$$\Rightarrow 8k = 64$$

$$K = \frac{64}{8} = 8$$

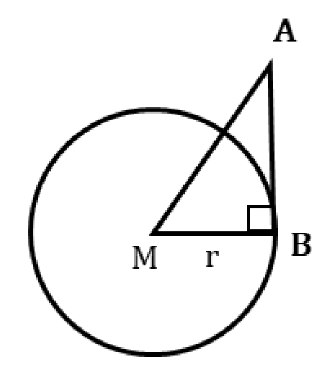
(47) If $P_M(A) = 3$ and $\overline{AB}$ is a tangent of the circle M then AB=…… cm

a) 18 b)9 c) 6 d) 36

ans. $P_M(A) = 36$

$\because P_M(A) = (AB)^2 \Rightarrow (AB)^2 = 36$

$AB = \sqrt{36} = 6$ cm



(48) In the opposite figure if $P_M(A) = 144, BM =$ 5cm then AC =……cm

a) 18 b) 8

c) 12 d) 16

ans. $P_M(A) = 144$

$\Rightarrow (MA)^2 - r^2 = 144$

$(MA)^2 - (5)^2 = 144$

$(MA)^2 = 169 \Rightarrow MA = 13$

$\because MC = 5$ cm $\therefore AC = 13 - 5 = 8$ cm

(49) If $f(\mathrm{x}) = x^2 + 9$, then the solution set of the inequality $f(x) \leq 0$ when R is......

a) $\{-3, 3\}$ b) $]3, \infty[$ c) $]-\infty, 3[$ d) $\emptyset$

ans. $f(x) = x^2 + 9$

let $f(x) = 0 \Rightarrow x^2 + 9 = 0 \Rightarrow x^2 = -9$ **impossible in R**

(there is no real solutions)

i.e $f(x) > 0 \quad , x \in \mathrm{R}$

$\therefore$ **S.S. of the inequality** $f(x) \leq 0$ **is** $\emptyset$

(50) If the range of the function $f(x) = a\sin(x)$ where $x \in [0,2\pi]$ is $[-5,5]$ then $a \in$.......

a) $\{5\}$ b) $\{-5\}$ c) $]-5, 5[$ d) $\{-5, 5\}$

ans. $-1 \leq \sin x \leq 1$

$\Rightarrow -a \leq a\sin x \leq a$ **if** a **is (+ve)** , $a \leq a\sin x \leq -a$ **if** a **is (-ve)**

$\because$ **range** $= [-5, 5] \Rightarrow a \in \{-5, 5\}$

(51) The solution set of the equation $x^2 + 16 = 0$ in the complex number is......

a) $\{4i\}$ b) $\{-4i\}$ c) $\{+4i, -4i\}$ d) $\{4\}$

ans. $x^2 + 16 = 0$

$\Rightarrow x^2 = -16 \rightarrow x^2 = 16i^2$

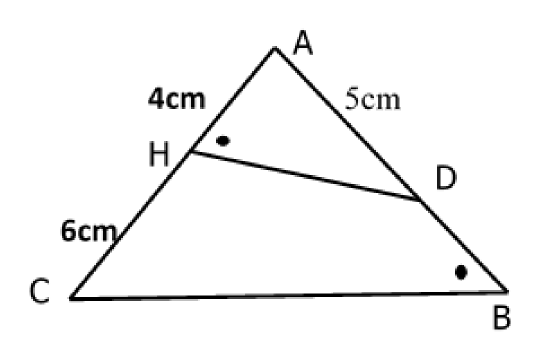
$\Rightarrow x = \pm 4i$, **S.S.** $= \{4i, -4i\}$

(52) In the opposite figure:

$m(A\hat{H}D) = m(A\hat{B}C)$,

$AD = 5cm , AH = 4cm, HC = 6\ cm$

then $DB =$………



a) 5 b) 4 c) 3 d) 8

<u>**ans.**</u> $\Delta\ AHD \sim \Delta\ ABC$

$$\Rightarrow \frac{AH}{AB} = \frac{AD}{AC} \Rightarrow \frac{4}{5 + DB} = \frac{5}{10}$$

$$\Rightarrow 5 + DB = \frac{4 \times 10}{5} = 8\ , DB = 8 - 5 = 3\ cm$$

(53) In the opposite figure if $\overline{AD}$ bisects $(B\hat{A}C)$ & $\overline{AH}$ bisects $(E\hat{A}C)$

then $\frac{BD}{DC} =$………

a) $\frac{BH}{HC}$ b) $\frac{BD}{DH}$ c) $\frac{AH}{AC}$ d) $\frac{AB}{AH}$

<u>**ans.**</u> **In** Δ **ABC** $\because \overline{AD}$ **bisects** $\angle$ **BAC** $\therefore \frac{BD}{DC} = \frac{AB}{AC} \rightarrow (1)$

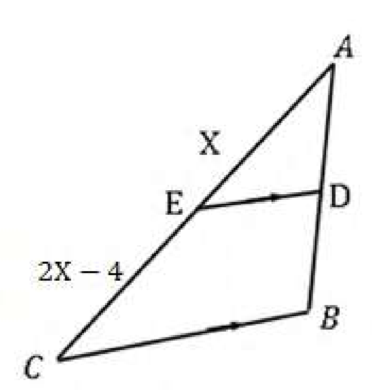
$\because \overline{AH}$ **bisects** $\angle$ **A externally** $\therefore \frac{HB}{HC} = \frac{AB}{AC} \rightarrow (2)$

from (1) , (2) we get

$$\frac{BD}{DC} = \frac{HB}{HC} \rightarrow (\boldsymbol{a})$$

(54) In the opposite figure : if $\overline{DE} \parallel \overline{BC}$,

AD : AB = 2 : 5 , then $x =$……



a) 8 b) 6

c) 4 d) 2

ans. $\frac{AD}{AB} = \frac{AE}{AC} \Rightarrow \frac{2}{5} = \frac{x}{3x-4}$

$6x - 8 = 5x$

$6x - 5x = 8$

$\boxed{x = 8}$

(55) The angle of measure 3932° lies in the …………… quadrant .

a) First b) Second c) Third d) Fourth

ans. $3942° = 360 \times 10 + 332°$

$332°$ lies in the 4th quad.

(56) If x = - 1 is one of the two roots of the quadratic equation

$x^2 - k\,x - 6 = 0$, then the value k = …………

a) 5 b) – 5 c) 6 d) – 6

ans. $\because$ $x = -1$ **is one of the roots of the eq.**

$\therefore (-1)^2 - k(-1) - 6 = 0$

$1 + k - 6 = 0$

$\boxed{k = 5}$

(57) In the opposite figure :

$\overline{DB} \cap \overline{CE} = \{A\}$, AE = 9 cm ,

AB = 10 cm , AC = 15 cm , DA = 6 cm

Area (ΔADE) = 36 cm^2 , then

Area (ΔABC) = ………. cm^2

a) 60 b) 75 c) 100 d) 225



ans. Δ ADE ~ Δ ABC

$$\Rightarrow \frac{\text{area of } \Delta \text{ ADE}}{\text{area of } \Delta \text{ ABC}} = \left(\frac{AD}{AB}\right)^2 \Rightarrow \frac{36}{\text{area of } \Delta \text{ ABC}} = \left(\frac{6}{10}\right)^2$$

$$\Rightarrow \text{area of } \Delta \text{ ABC} = 100 \text{ cm}^2$$

(58) The solution set of the equation $x^2 = x$ in R is ……

a) $\{0\}$ b) $\{1\}$ c) $\{-1, 1\}$ d) $\{0. 1\}$

ans. $x^2 = x$

$\Rightarrow x^2 - x = 0$

$x(x - 1) = 0$

$x = 0 , x = 1$

S.S. $= \{0, 1\}$

(59) The simplest form of the expression: $\tan(180 - \theta) + \cot(270 - \theta)$ is …….

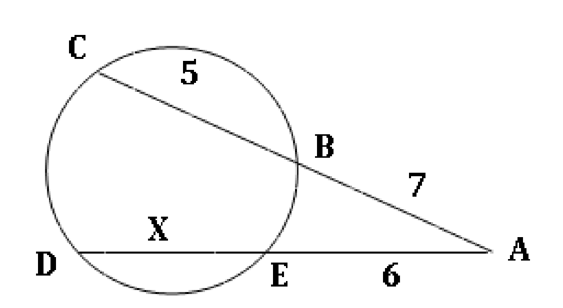
a) zero b) $2 \tan \theta$ c) $2 \cot \theta$ d) 2

ans. $\tan(180 - \theta) + \cot(270 - \theta) = -\tan \theta + \tan \theta = \text{zero}$

(60) In the opposite figure :

If AB = 7 cm , BC = 5 cm , AE = 6 cm

DE = x cm, then x = …..



a) 7 b) 8

c) 4 d) 6

ans. $\mathbf{AE \times AD = AB \times AC}$

$\mathbf{6(6 + x) = 7 \times 12}$

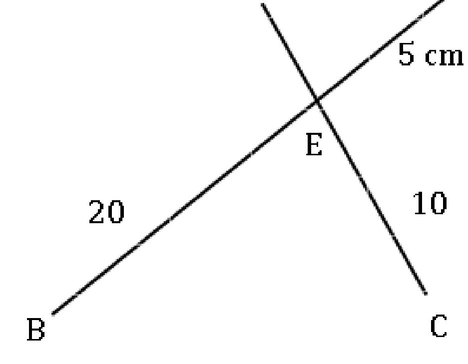
$$\mathbf{6 + x = \frac{7 \times 12}{6} = 14}$$

$\mathbf{x = 14 - 6 = 7\ cm}$

(61) In the opposite figure :

$\overline{AB} \cap \overline{CD} = \{E\}$, the points A , B , C and D lie on the same circle when

ED = ………….. cm



a) 5 b) 8

c) 10 d) 20

ans. $\mathbf{EC \times ED = EA \times EB}$

$\mathbf{10 \times ED = 5 \times 20}$

$\mathbf{ED = 10\ cm}$

(62) The range of the function $f : f(\theta) = 3\sin(2\theta)$ is ……

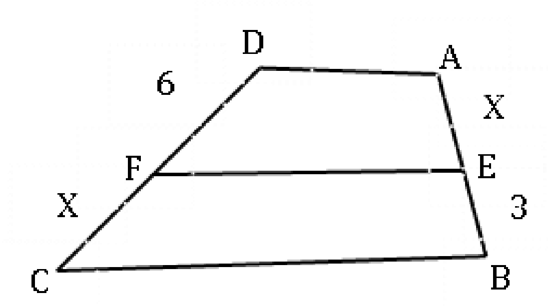
a) $[-2, 2]$ b) $]-2, 2[$ c) $[-3, 3]$ d) $]-3, 3[$

ans. $\mathbf{-1 \le \sin(2\theta) \le 1 \quad \times 3}$

$\Rightarrow -3 \leq 3\sin(2\theta) \leq 3$

range = $[-3, 3]$

(63) In the opposite figure: X = ……



a) 6 b) $3\sqrt{2}$

c) $3\sqrt{3}$ d) 18

ans. $\because \overline{AD} \,//\, \overline{EF} \,//\, \overline{BC} \;\therefore \frac{AE}{DF} = \frac{EB}{FC}$

$\Rightarrow \frac{x}{6} = \frac{3}{2} \Rightarrow x^2 = 3 \times 6 \Rightarrow x = \sqrt{18} = 3\sqrt{2}$

(64) In the opposite figure :

If $\overline{AB}$ is a common tangent segment

to the two circles at B , then

AC : AD = ……



a) AB : AF b) 3 : 4

c) AD : AF d) AE : AF



ans. **For the smaller circle :** $(AB)^2 = AD \times AE \to (1)$

For the greather circle : $(AB)^2 = AC \times AF \to (2)$

From (1) , (2)

$AD \times AE = AC \times AF$

$\Rightarrow \frac{AC}{AD} = \frac{AE}{AF}$

(65) If the ratio between the surface areas of two similar polygons is $16 : 25$, then the ratio between lengths of two corresponding sides of them is ……

a) $2 : 5$ b) $4 : 5$ c) $16 : 25$ d) $16 : 41$

ans.

The ratio between two corresponding sides $= \sqrt{\frac{16}{25}} = \frac{4}{5}$

(66) The quadratic equation whose roots are $(1 + i)$ and $(1 - i)$ is ......

a) $x^2 - 2x + 2 = 0$ b) $x^2 + 2x - 2 = 0$

c) $x^2 + 2x + 2 = 0$ d) $x^2 - 2x - 2 = 0$

ans. **sum of the two roots** $= (1 + i) + (1 - i) = 2$

product of the two roots $= (1 + i)(1 - i) = 2$

The equation is $x^2 - 2x + 2 = 0$

(67) If $\tan(180 + \theta) = 1$, where θ is the smallest positive angle, then $\theta =$......°

a) 60 b) 30 c) 45 d) 135

ans. $\tan(180° + \theta) = 1 \Rightarrow \tan\theta$

$\because$ **θ is the smallest (+ve)** $\therefore$ **θ lies in 1st quad**

$\theta = 45°$

(68) In the opposite figure :

If $\overrightarrow{AD}$ is a tangent to the circle ,

$m(\angle A) = 55°$,

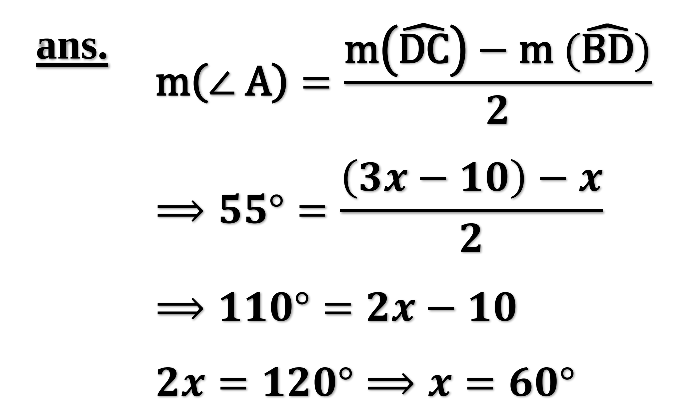
$m(\widehat{DC}) = (3x - 10)°$, $m(\widehat{DB}) = x°$

then x = ……..°



a) 120 b) 60 c) 30 d) 15

ans.



$$m(\angle A) = \frac{m(\widehat{DC}) - m(\widehat{BD})}{2}$$

$$\Rightarrow 55° = \frac{(3x - 10) - x}{2}$$

$$\Rightarrow 110° = 2x - 10$$

$$2x = 120° \Rightarrow x = 60°$$

(69) The interior bisector of an angle of a triangle .... to the exterior bisector of the same angle.

a) Parallel b) Perpendicular c) Equal d) Congruent

ans. **Perpendicular**

(70) If $a = 1 + \sqrt{2}$, $b = 1 - \sqrt{2}\, i$, then a b = ...

a) – 1 b) 1 c) 2 d) 3

ans. $\boldsymbol{a = 1 + \sqrt{2}\, i\, , b = 1 - \sqrt{2}\, i}$

$$\boldsymbol{a\, b = \left(1 + \sqrt{2}\, i\right)\left(1 - \sqrt{2}\, i\right) = 1 - 2\, i^2 = 1 - 2(-1) = 3}$$

(71) If L, 2 – L are the two roots of the quadratic equation $x^2 + k\, x + 6 = 0$, then k = ...

a) 1 b) – 2 c) – 3 d) 5

ans. $\text{sum of the two roots} = \dfrac{-k}{1}$

$\Rightarrow L + (2 - L) = -k$

$2 = -k$

$\boxed{k = -2}$

(72) If $\tan(4\theta) = \cot(5\theta)$, then $\sin(3\theta) =$......

a) $\frac{1}{2}$ b) 1 c) – 1 d) $\frac{\sqrt{3}}{2}$

ans. $\tan(4\theta) = \cot(5\theta)$

$\Rightarrow 4\theta + 5\theta = 90°$

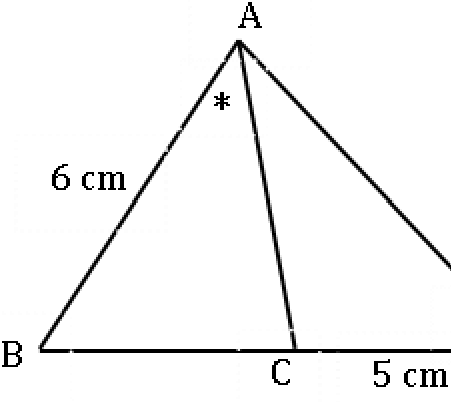
$9\theta = 90° \Rightarrow \theta = 10°$

$\sin(3\theta) = \sin(3 \times 10°) = \sin 30° = \dfrac{1}{2}$

(73) In the opposite figure :

$C \in \overline{BD}$, m(∠D) = m(∠BAC)

AB = 6 cm , CD = 5 cm , then BC = …... cm



a) 3 b) 4

c) 5 d) 6

ans. $\Delta\, ABC \sim \Delta\, DBA$

$\Rightarrow \dfrac{AB}{DB} = \dfrac{BC}{BA} \Rightarrow \dfrac{6}{5 + BC} = \dfrac{BC}{6}$

$(BC)^2 + 5\,BC = 36$

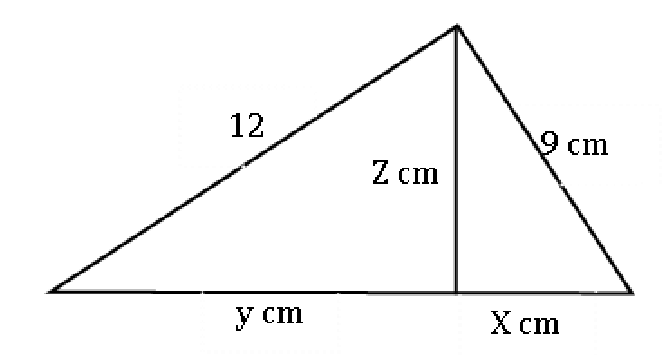
$(BC)^2 + 5(BC)2 - 36 = 0$

$(BC - 4)(BC + 9) = 0$

$\mathbf{BC = 4 \text{ or } \underset{refused}{BC = -9}}$

(74) In the opposite figure:

$X + y + z = ...$ cm



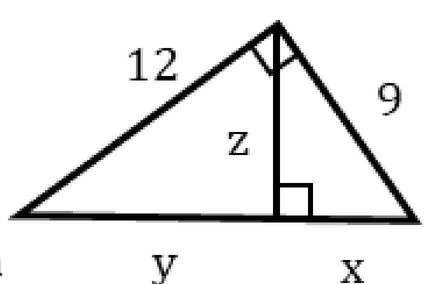
a) 15 b) 18.2

c) 22 d) 22.2

ans. $\boldsymbol{x + y = \sqrt{(9)^2 + (12)^2} = 15}$

$\boldsymbol{z = \frac{9 \times 12}{15} = 7.2 \text{ cm}}$

$\boldsymbol{\therefore x + y + z = 15 + 7.2 = 22.2 \text{ cm}}$



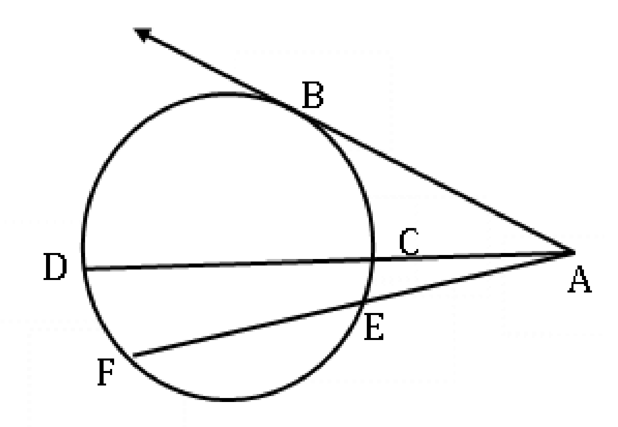
(75) The simplest form of the imaginary number i^{93} = ...

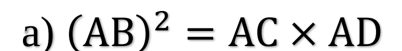
a) – 1 b) 1 c) i d) – i

ans. $\boldsymbol{i^{93} = i^{92+1} = i^{92} \times i = 1 \times i = i}$

(76) In the opposite figure:

All the following expressions are true except ......





a) $(AB)^2 = AC \times AD$

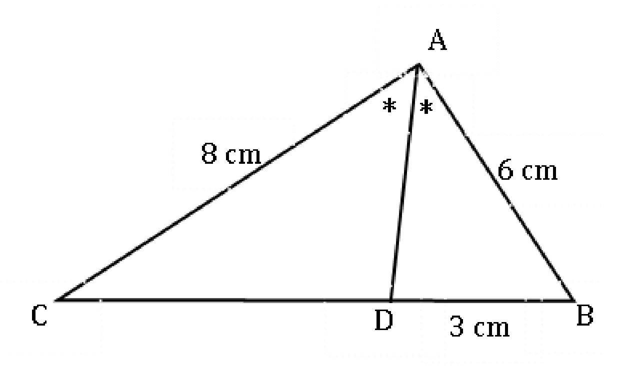
b) $(AB)^2 = AE \times AF$

c) $AC \times AD = AE \times AF$

d) $AC \times CD = AE \times EF$

ans. $\mathbf{AC \times CD = AE \times EF}$

(77) In the opposite figure : if $\overrightarrow{AD}$ bisects $\angle BAC$, AB = 6 cm , AC = 8 cm , BD = 3 cm , then AD = ………. cm



a) 4 b) 5 c) 6 d) 8

ans. $\because \overline{AD}$ **bisects** $\angle$ **BAC** $\therefore \frac{DB}{DC} = \frac{AB}{AC}$

$\Rightarrow \frac{3}{DC} = \frac{6}{8} \Rightarrow \frac{3 \times 8}{6} = 4 \text{ cm}$

$AD = \sqrt{AB \times AC - DB \times DC} = \sqrt{6 \times 8 - 3 \times 4} = 6 \text{ cm}$

(78) If one of the two roots of the quadratic equation:

$x^2 - (m - 3)x + 3 = 0$ is additive inverse of the other root,

then m = ...

a) – 3 b) – 2 c) 2 d) 3

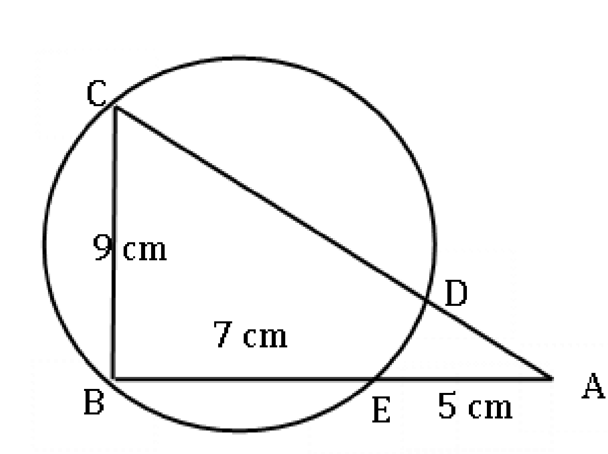
ans. $\because$ **one of the two roots is the additive inverse of the other root**

$\therefore$ **sum of the two roots = 0**

$m - 3 = 0 \Rightarrow m = 3$

(79) In the opposite figure:

DC = ... cm



a) 9 b) 10

c) 11 d) 12

ans. $\because m(\angle B) = 90^\circ \quad \therefore AC = \sqrt{(9)^2 + (7+5)^2} = 15 \text{ cm}$

$AD \times AC = AE \times AB \Rightarrow AD \times 15 = 5 \times 12$

$AD = \dfrac{5 \times 12}{15} = 4 \text{ cm}$

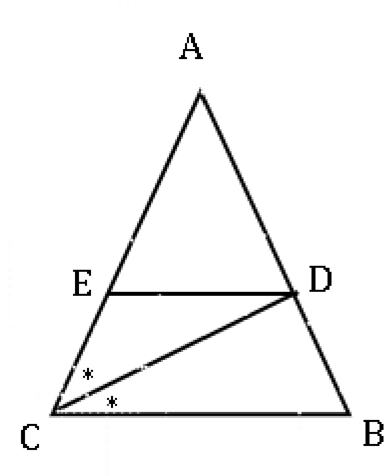
$\Rightarrow DC = 15 - 4 = 11 \text{ cm}$

(80) In the opposite figure:

$\frac{AE}{EC} = \ldots\ldots$ cm

a) $\frac{DE}{BC}$ b) $\frac{AD}{AB}$

c) $\frac{AC}{CB}$ d) $\frac{AB}{BC}$



ans. $\because \overline{CD}$ bisects $\angle ACB \quad \therefore \dfrac{DA}{DB} = \dfrac{CA}{CB} \rightarrow (1)$

$\because \overline{DE} \,//\, \overline{BC} \quad \therefore \dfrac{EA}{EC} = \dfrac{DA}{DB} \rightarrow (2)$

from (1) , (2) we get

$\dfrac{AE}{EC} = \dfrac{AC}{CB}$ (c)

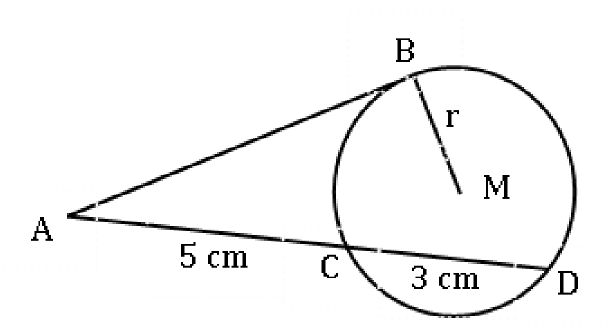


(81) In the opposite figure:

$P_m(A) = \ldots\ldots$

a) 25 b) $(AB)^2 - r^2$

c) 40 d) $(AM)^2 - (AB)^2$



ans. $\mathbf{P_M(A) = (AM)^2 - r^2 = (AB)^2 = AC \times AD = 5 \times 8 = 40}$

(82) The function $f: f(x) = ax^2 + bx + c$ has a unique sign in R when ......

a) $b^2 - 4ac > 0$ b) $b^2 - 4ac < 0$

c) $b^2 - 4ac = 0$ d) $b^2 - 4ac \geq 0$

ans. $\boldsymbol{b^2 - 4ac < 0}$

(83) The degree measure of the central angle in a circle whose diameter length 12 cm and subtended an arc of length 3π cm equals ......

a) $30°$ b) $60°$ c) $90°$ d) $120°$

ans. $\mathbf{L = 3\pi \text{ cm} , r = 6 \text{ cm}}$

$$\theta^{rad} = \frac{L}{r} = \frac{3\pi}{6} = \frac{\pi}{2}$$

$$x° = \frac{\pi}{2} \times \frac{180°}{\pi} = 90°$$

(84) If one the two roots of quadratic equation $ax^2 + 4x + 7 = 0$ is the multiplicative inverse of the other root, then a = ...

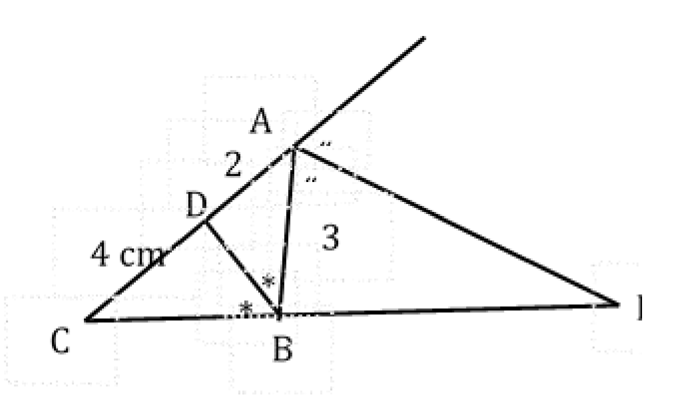
a) $\frac{1}{7}$ b) 7 c) 4 d) – 7

ans. **The product of the two roots = 1**

$$\Rightarrow \frac{7}{a} = 1 \Rightarrow \boxed{a = 7}$$

(85) In the opposite figure:

BE = ... cm



a) 6 b) 8

c) 9 d) 10

ans. $\overline{BD}$ bisects $\angle ABC \quad \therefore \frac{DA}{DC} = \frac{BA}{BC} \Rightarrow \frac{2}{4} = \frac{3}{BC}$

$$\Rightarrow BC = \frac{4 \times 3}{2} = 6 \text{ cm}$$

$\overline{AE}$ bisects $\angle A$ externally $\quad \therefore \frac{EB}{EC} = \frac{AB}{AC} \Rightarrow \frac{EB}{EB+6} = \frac{3}{6}$

$$\Rightarrow 6\ EB = 3\ EB + 18$$

$$3\ EB = 18 \Rightarrow EB = 6 \text{ cm}$$

(86) If the solution set of the inequality $x^2 - 10 < bx$ is $]-2, 5[$,

then b = ...

a) – 2 b) – 10 c) 3 d) 5

ans. $x^2 - bx - 10 < 0$

$\because$ S.S. $=]-2, 5[$

$\therefore$ the two roots of the equation $x^2 - bx - 10 = 0$ are $-2, 5$

$$\Rightarrow (-2)^2 - b(-2) - 10 = 0$$

$$4 + 2b - 10 = 0$$

$$2b = 6 \Rightarrow \boxed{b = 3}$$

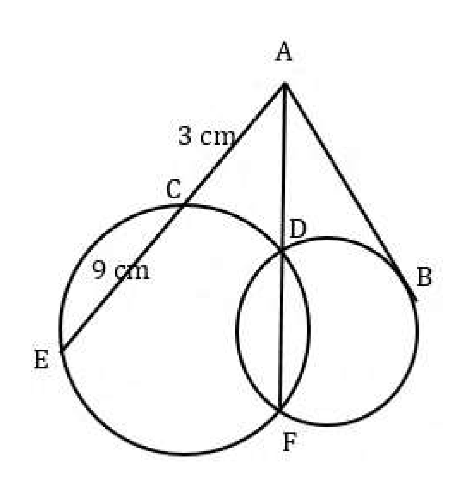
(87) In the opposite figure:

If AC = 3 cm, CE = 9 cm,

then AB = ... cm

a) 27 b) 36

c) 9 d) 6



ans. $\mathbf{AD \times AF = AC \times AE = 3 \times 12 = 36}$

$\mathbf{(AB)^2 = AD \times AF = 36 \Rightarrow 6\text{ cm}}$

(88) If the two roots of the quadratic equation: $4x^2 - 12x + c = 0$ are equal,

then c = ...

a) 3 b) 4 c) 9 d) 16

ans. ∵ **the two roots are equal** $\therefore \boldsymbol{b^2 - 4ac = 0}$

$\Rightarrow \mathbf{(-12)^2 - 4(4)(\boldsymbol{c}) = 0}$

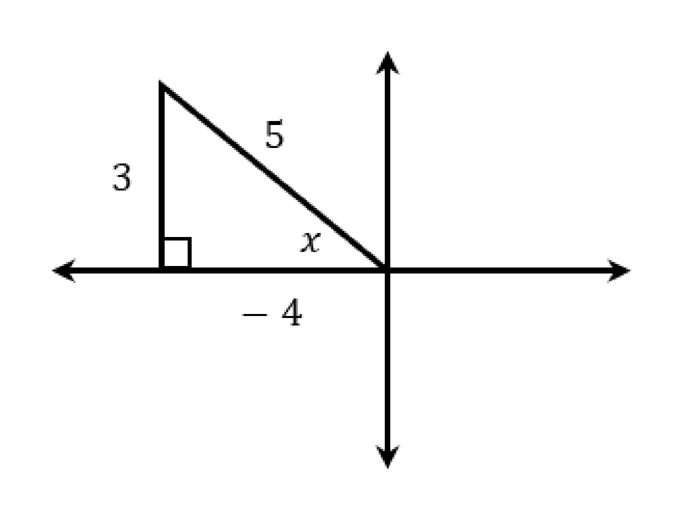
$\mathbf{144 - 16\,\boldsymbol{c} = 0}$

$\Rightarrow \boldsymbol{c} = \mathbf{\frac{144}{16} = 9}$

(89) If $10\sin x = 6$, where x is the greatest positive measure, $x \in [0, 2\pi[$ then the value of $\sec(3\pi + x) =$ ......

a) $\frac{3}{5}$ b) $\frac{-5}{4}$ c) $\frac{5}{4}$ d) $\frac{-5}{3}$

ans. $\mathbf{10\sin x = 6 \Rightarrow \sin x = \frac{6}{10} = \frac{3}{5}}$



$\because$ **x is the greatest (+ve) measure**

$\therefore$ **x lies in 2nd quad.**

$\mathbf{\sec(3\pi + x) = \sec(\pi + x)}$

$\mathbf{= \sec(\pi + x) = -\sec x}$

$\mathbf{= -\left(\frac{5}{-4}\right) = \frac{5}{4}}$

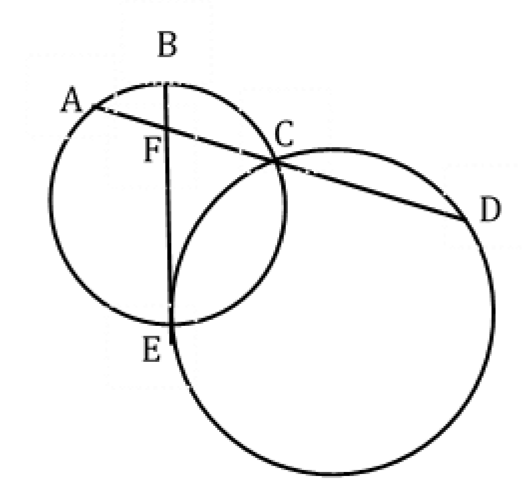
(90) In the opposite figure:

The two circles intersecting at C and E

$\overline{\text{BE}}$ is a tangent to the greater circle at E

AF = 3 cm, FC = 4 cm, CD = 5 cm,

then BE = ... cm



a) 9 b) 8

c) 7 d) 6

ans. $\mathbf{(FE)^2 = FC \times FD = 4 \times 9 = 36 \Rightarrow FE = \sqrt{36} = 6\ cm}$

$\mathbf{BF \times FE = AF \times FC}$

$\mathbf{BF \times 6 = 3 \times 4}$

$\mathbf{BF = 2\ cm}$

$\mathbf{\therefore BE = BF + FE = 2 + 6 = 8\ cm}$

(91) If $x + iy = i^{15} + 2\sqrt{-4}$, then $x + y =$ ......

a) 3 b) 4 c) zero d) – 3

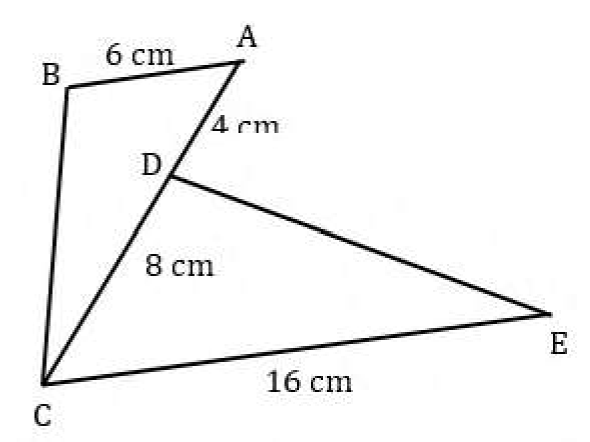
ans. $\mathbf{x + yi = i^{15} + 2\sqrt{-4} = -i + 2\sqrt{4i^2} = -i + 4i = 3i}$

$\mathbf{\Rightarrow x = 0\ , y = 0}$

$\boldsymbol{x + y = 0 + 3 = 3}$

(92) In the opposite figure:

If $\overline{AB}$ // $\overline{EC}$, then $\frac{DE}{BC} =$ ......



a) $\frac{3}{4}$ b) $\frac{4}{3}$

c) $\frac{2}{3}$ d) $\frac{1}{2}$

ans. $\boldsymbol{\Delta\, ABC \sim \Delta\, CDE}$

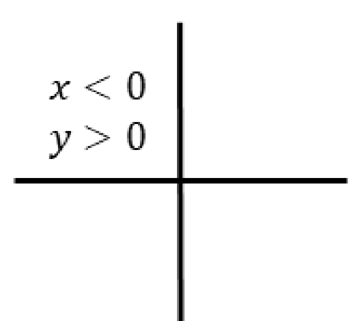
$$\Rightarrow \frac{\mathbf{DE}}{\mathbf{BC}} = \frac{\mathbf{CD}}{\mathbf{AB}}$$

$$\Rightarrow \frac{\mathbf{DE}}{\mathbf{BC}} = \frac{\mathbf{8}}{\mathbf{6}} = \frac{\mathbf{4}}{\mathbf{3}}$$

(93) If $\sin\theta > 0$, $\tan\theta < 0$, then θ lies in ...... quadrant

a) First b) Second c) Third d) Fourth

ans. $\boldsymbol{\sin\theta > 0 \Rightarrow y > 0}$



$$\boldsymbol{\tan\theta < 0 \Rightarrow \frac{\sin\theta}{\cos\theta} < 0}$$

$$\boldsymbol{\Rightarrow \cos\theta < 0 \Rightarrow x < 0}$$

Second quadrant

(94) If the curve of the function $f: f(x) = ax^2 + bx + c$ intersects the x – axis at the two points (5, 0), (1, 0), then the solution set of the equation set of the equation: $2ax^2 + 2bx + 2c = 0$ is ......

a) {10, 2} b) {5, 0} c) {1, 0} d) {5 ,1}

ans. $\boldsymbol{f(x) = ax^2 + bx + c}$ **intersects** $\boldsymbol{x -}$ **axis at** $\boldsymbol{(5, 0)}$, $\boldsymbol{(1, 0)}$

$\therefore$ **the S.S. of the eq.** $\boldsymbol{ax^2 + bx + c = 0}$ **is** $\boldsymbol{\{5, 1\}}$

$\because \boldsymbol{2ax^2 + 2bx + 2c = 0\ (\div 2) \Rightarrow ax^2 + bx + c = 0}$

$\therefore$ **S.S.** $\boldsymbol{= \{5, 1\}}$

(95) If one of the roots of the equation : $3x^2 - (k+2)x + k^2 + 2k = 0$ is the multiplicative inverse of the other, then k = ...

a) $(-3, 1)$ b) $(-3, -1)$ c) $(3, -1)$ d) $(3, 1)$

ans. $\boldsymbol{a = 3, b = -(k+2), c = k^2 + 2k}$

$\because$ **one of the two roots is the multip. inverse of the other**

$\therefore$ **product of the two roots = 1**

$$\Rightarrow \frac{c}{a} = 1 \Rightarrow k^2 + 2k = 3$$

$\boldsymbol{k^2 + 2k - 3 = 0}$

$\boldsymbol{(k+3)(k-1) = 0}$

$\boldsymbol{k = -3 \mid k = 1}$

(96) The ratio between lengths of two corresponding sides in two similar polygons equal 1 : 2, then which of the following statements is incorrect?

a) the ratio between their areas equals 1 : 4

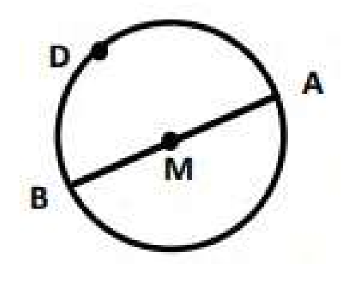
b) the ratio between their perimeters equals 1 : 4

c) the ratio between the measures of their corresponding angles equals 1 : 1

d) the ratio of similarity equals 1 : 2

ans. **the ratio between their perimeters equals 1 : 4 (b)**

(97) In the opposite figure:



$\overline{AB}$ is the diameter of the circle M, if the length of the arc $(\widehat{ADB}) = 8\pi$ cm, then the radius length of its circle M equals ...... cm

a) 16 b) 8 c) 4 d) 2

ans. **length of $\widehat{ADB} = \pi r$**

$$8\pi = \pi r$$

$$\Rightarrow r = 8 \text{ cm}$$

(98) If $\Delta ABC \sim \Delta XYZ$, the perimeter of ΔABC : the perimeter of $\Delta XYZ = 1 : 4$, then the area of ΔABC : the area of ΔXYZ = ...

a) $1 : 2$ b) $2 : 8$ c) $1 : 16$ d) $1 : 64$

ans. $\Delta ABC \sim \Delta XYZ$

$$\because \frac{\text{P. of } \Delta ABC}{\text{P. of } \Delta XYZ} = \frac{1}{4}$$

$$\therefore \frac{\text{area of } \Delta ABC}{\text{area of } \Delta XYZ} = \left(\frac{1}{4}\right)^2 = \frac{1}{16}$$

(99) The degree measure of the central angle which subtends an arc of length 4 cm and the radius of its circle equals 5 cm equals ......

a) $45°50'$ b) $55°50'$ c) $144°$ d) $72°$

ans. $$\theta^{rad} = \frac{L}{r} = \frac{4}{5}$$

$$\theta° = \frac{4}{5} \times \frac{180}{\pi} = 45° \, 50'$$

(100) If $\cos(270° - \theta) = \frac{-1}{2}$ such that θ is the measure of the smallest positive angle, then = ... °

a) 30 b) 150 c) 210 d) 330

ans. $\cos(270° - \theta) = \frac{-1}{2} \Rightarrow -\sin\theta = \frac{-1}{2} \Rightarrow \sin\theta = \frac{1}{2}$

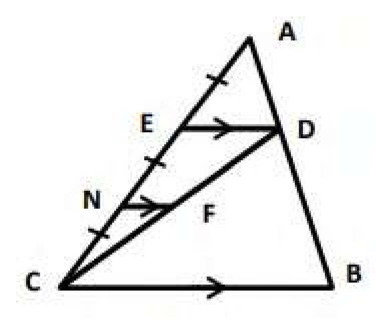
∵ θ is the smallest (+ve)

∴ θ lies in 1st quad.

$$\Rightarrow \theta = \sin^{-1}\left(\frac{1}{2}\right) = 30°$$

(101) In the opposite figure:

$\overline{ED}$ // $\overline{NF}$ // $\overline{CB}$, FN = 2 cm, then length of $\overline{BC}$ = ... cm



a) 8 b) 9 c) 10 d) 12

ans. **ED = 4 cm**

$$\frac{AE}{AC} = \frac{ED}{BC} \rightarrow \frac{1}{3} = \frac{4}{BC} \rightarrow BC = 12 \text{ cm} \quad \textbf{(d)}$$

(102) If one of the two roots of the equation : $x^2 - (m+2)x + 3 = 0$ is the additive inverse of the other root , then m = ……

a) 3 b) 2 c) – 2 d) – 3

ans. **Sum roots = 0**

$$\frac{0}{1} = \frac{m+2}{1} \rightarrow \quad m + 2 = 0 \rightarrow m = -2 \quad \textbf{(c)}$$

(103) The exterior bisector at the vertex of an isosceles triangle ……….. to the base.

a) parallel b)perpendicular c) bisects d) equal

ans. **parallel (a)**

(104) The angle with measure 60° in standard position is equivalent to the angle with measure ……… °

a) 120 b) 240 c) 300 d) 420

ans. **60 + 360 = 420 (d)**

(105) If the ratio between the areas of the two similar polygons is 4 : 9 then the ratio between their two perimeters equals …. : ….

a) 4 : 9 b) 2 : 3 c) 16 : 81 d) 3 : 2

ans. $\frac{4}{9} = \left(\frac{\text{per } 1^{st}}{\text{per } 2^{nd}}\right)^2 \rightarrow \frac{\text{per } 1^{st}}{\text{per } 2^{nd}} = \frac{2}{3}$ **(b)**

(106) The conjugate of the number (5 – 3i) is ………..

a) $-3i - 5$ b) $3i - 5$ c) $5 - 3i$ d) $5 + 3i$

ans. $\boldsymbol{5 + 3i}$ **(d)**

(107) In the equation : $ax^2 + bx + c = 0$, if the sum of the two roots = the product of the two roots , then b = …….

a) a b) – a c) c d) – c

ans. **sum roots = product roots**

$\frac{-b}{a} = \frac{c}{a} \rightarrow -b = c \rightarrow b = -c$ **(d)**

(108) If polygon M_1 is minimization of polygon M_2 and k is the ratio of minimization, then …………

a) $k > 0$ b) $k = 1$ c) $k > 1$ d) $0 < k < 1$

ans. **$0 < k < 1$ (d)**

(109) The range of the function $f(\theta) = \cos 5\theta$ is ……

a) $\{-5, 5\}$ b) $[-1, 1]$ c) $]-5, 5[$ d) $[-5, 5]$

ans. $[-1, 1]$ (b)

(110) If $\Delta abc \sim \Delta xyz$, $m(\angle a) = 50°$, $m(\angle y) = 70°$, then $m(\angle c) =$ ……°

a) 50 b) 60 c) 70 d) 120

ans. 60 (b)

(111) If $(1 + i^4)(1 - i^7) = x + y\,i$, then $x + y =$ ......

a) 4 b) 3 c) 2 d) 1

ans. $\mathbf{(1 + i)(1 - i^3)}$

$\mathbf{2 \times (1 + i) = 2 + 2i}$

$\mathbf{x + y = 4}$ **(a)**

(112) All .... are similar

a) triangles b) rectangles c) squares d) rhombuses

ans. **squares (c)**

(113) If $\sin\theta = -1, \cos\theta = 0$, then $\theta =$ ......°

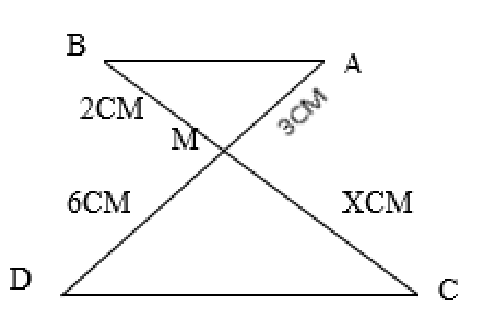
a) 90 b) 180 c) 270 d) 360

ans. $\mathbf{\sin\theta = -1, \cos\theta = 0}$

$\mathbf{\theta = 270}$ **(c)**

(114) In the opposite figure:

$x = ...$ cm



a) 2 b) 3

c) 4 d) 9

ans. $\frac{3}{6} = \frac{2}{x} \rightarrow \quad x = 4$ **(c)**

(115) If the roots of the equation : $x^2 + 2x - m = 0$ are equal ,

then m = ……..

a) – 2 b) – 1 c) 1 d) 2

ans. **two roots L, L**

$L + L = 2$	$L^2 = -m$
$2L = 2$	$1 = -m$
$L = 1$	$m = -1$

(b)

(116) If AM = 4 cm, r = 3 cm, such that A is a point outside the circle M , then

$P_M(A)$ = ... cm

a) 7 b) 9 c) 16 d) 25

ans. $P_M = (A) = (AM)^2 - r^2 = 16 - 9 = 7$ **(a)**

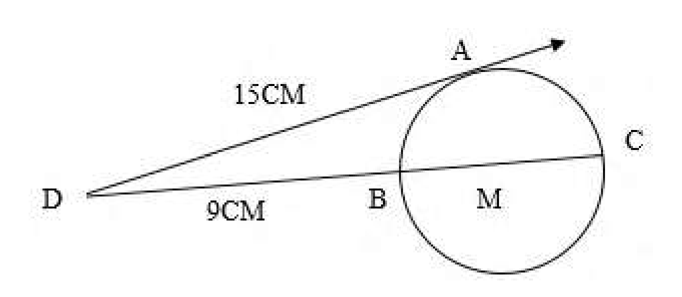
(117) The angle whose measure is $-120°$ lies in the ……... quadrant.

a) first b) second c) third d) fourth

ans. **second (b)**

(118) In the opposite figure:

MB = ...



a) 25　　b) 16

c) 8　　d) 4

ans. $\mathbf{15^2 = 9 \times (9 + 2r) \rightarrow 225 = 9(9 + 2r) \rightarrow 25 = 9 + 2r \rightarrow r = 8}$ **(c)**

(119) If $x = -1$ is one of the roots of the equation: $x^2 - ax - 2 = 0$, then

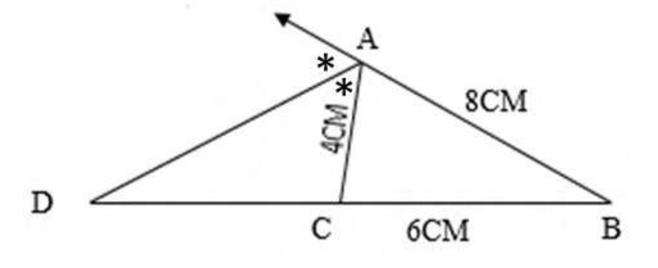
a = ...

a) – 3　　b) – 1　　c) 1　　d) 3

ans. $\mathbf{(-1)^2 - a \times (-1) - 2 = 0 \rightarrow 1 + a - 2 = 0 \rightarrow a = 1}$ **(c)**

(120) In the opposite figure:

CD = ...



a) 12　　b) 8

c) 6　　d) 4

ans. $\mathbf{\frac{8}{4} = \frac{x + 6}{x} \rightarrow 2x = x + 6 \Rightarrow x = 6}$ **(c)**

(121) The radian measure of the central angle subtending an arc of length 8 cm, in a circle whose diameter length is 4 cm equals ....

a) 2^{rad}　　b) 4^{rad}　　c) 16^{rad}　　d) 32^{rad}

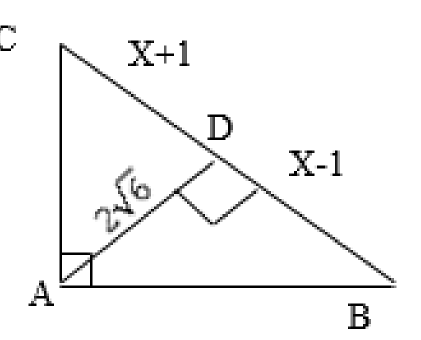
ans. $\mathbf{\theta^{\text{rad}} = \frac{l}{r} = \frac{8}{2} = 4^{\text{rad}}}$ **(b)**

(122) In the opposite figure:

$x = ...$

a) 5　　b) 10

c) 12　　d) 25



ans. $\left(2\sqrt{6}\right)^2 = (x-1)(x+1) \rightarrow 24 = x^2 - 1 \rightarrow 25 = x^2 \Rightarrow x = 5$ **(a)**

(123) The simplest form of the imaginary number i^{45} = ………..

a) i　　b) – i　　c) – 1　　d) 1

ans. $i^{45} = i^{4\times11+1} = i^1$ **(a)**

(124) The simplest form the expression :

tan(360° – θ) + cot (270° – θ) is ………

a) 2 tan θ　　b) 2 cot θ　　c) 2　　d) 0

ans. $\tan(360-\theta) + \cot(270-\theta) = -\tan\theta + \tan\theta = 0$ **(d)**

(125) The ratio between the length of two radii of two circles is 3 : 5, if the area of the smaller circle is 27 cm^2. , then the area of the greater circle equals ……….. cm^2

a) 45　　b) 2 cot θ　　c) 75　　d) 100

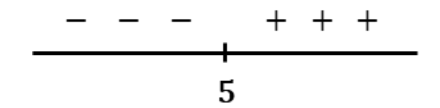
ans. $\frac{r_1}{r_2} = \frac{3}{5}$

$$\frac{27}{\pi r_2^2} = \frac{\pi r_1^2}{\pi r_2^2} = \frac{r_1^2}{r_2^2} = \frac{3^2}{5^2} \Rightarrow \pi r_2^2 = \frac{27\times25}{9} = 75 \quad \textbf{(c)}$$

(126) The sign of function $f : f(x) = x - 5$ is positive in the interval ……...

a) $]-\infty, 5[$ b) $]5, \infty[$ c) $[-5, \infty[$ d) $]-\infty, -5]$

ans. $\boldsymbol{f(x) = x - 5 \rightarrow x = 5}$



$]\mathbf{5}, \infty[$ **(b)**

(127) In the opposite figure:

If the area of Δ DEF = 6 cm^2

then the area of shaded area



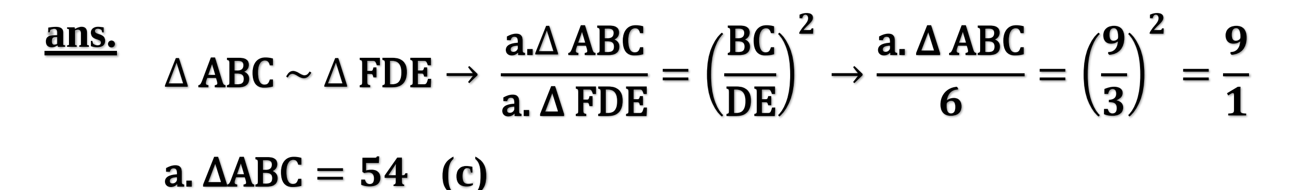
= ...... cm^2

A
F
C 1 cm E 3 cm D 5 cm B

a) 36 b) 48

c) 54 d) 81

ans.



$$\Delta \text{ABC} \sim \Delta \text{FDE} \rightarrow \frac{\text{a.}\Delta \text{ ABC}}{\text{a. }\Delta \text{ FDE}} = \left(\frac{\text{BC}}{\text{DE}}\right)^2 \rightarrow \frac{\text{a. }\Delta \text{ ABC}}{6} = \left(\frac{9}{3}\right)^2 = \frac{9}{1}$$

a. ΔABC = 54 (c)

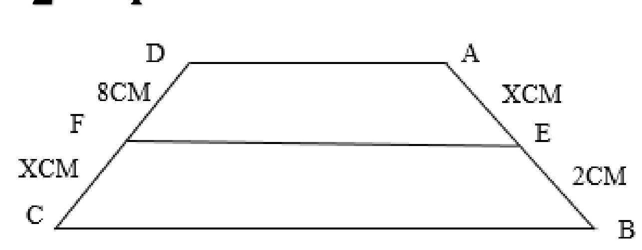
(128) The value of the expression :

$\sin(600°)\cos(-30°) + \sin(150°)\cos(240°) = \ldots\ldots\ldots\ldots$

a) – 1 b) 0 c) 1 d) 2

ans. $\boldsymbol{\sin 240 \times \frac{\sqrt{3}}{2} + \frac{1}{2} \times \frac{-1}{2} \Rightarrow \frac{-\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} - \frac{1}{4} = -1}$ **(a)**

(129) In the opposite figure:



x = ...

a) 2 b) 4

c) 8 d) 16

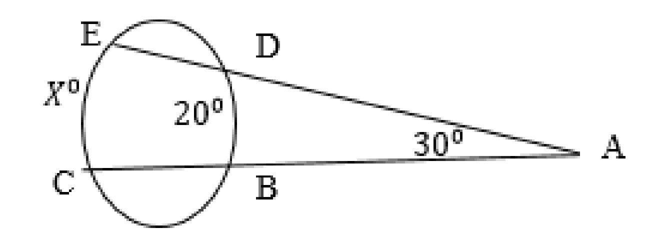
ans. $\boldsymbol{\frac{x}{8} = \frac{2}{x} \rightarrow x^2 = 16 \rightarrow x = 4}$ **(b)**

(130) The solution set of the inequality $x^2 + 1 \leq 0$ in R is ………..

a) ∅ b) R c) $[-1, 1[$ d) $R -]-1, 1]$

ans. $\boldsymbol{x^2 + 1 \leq 0 \rightarrow x^2 \leq -1, \emptyset = S.S.}$**, in R (a)**

(131) In the opposite figure:



$X = \ldots\ldots°$

a) 40 b) 80

c) 90 d) 180

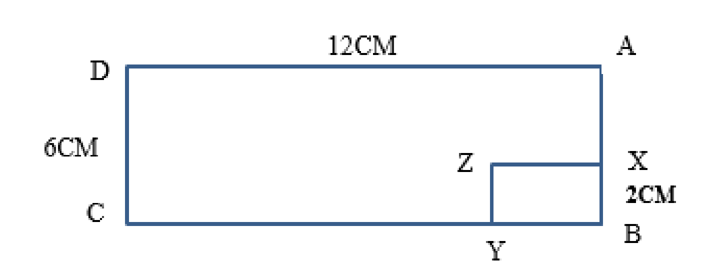
ans. $\boldsymbol{30 = \frac{1}{2}x - \frac{1}{2} \times 20 \rightarrow 40 = \frac{1}{2}x \rightarrow x = 80}$ **(b)**

(132) If the power of point C with respect to the circle M is a negative amount, then C lies …… the circle.

a) inside b) on c) on the centre of d) outside

ans. **inside (a)**

(133) In the opposite figure:




□ ABCD ~ □ XBYZ

then YC = ...

a) 6 b) 8

c) 10 d) 11

ans. $\frac{\text{a. ABCD}}{\text{a. XBYZ}} = \left(\frac{6}{1}\right)^2 \rightarrow \frac{12 \times 6}{\text{a. XBYZ}} = \frac{36}{1} \rightarrow \text{a. XBYZ} = 2$

$2 = xb \times yb \rightarrow 2 = 2 \times yb$

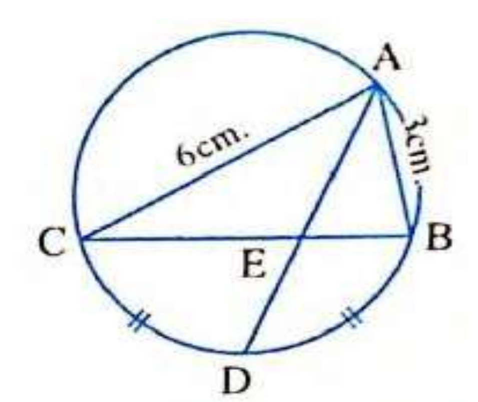
$yb = 1, yc = 12 - 1 = 11$ **(d)**

(134) If L and M are the two roots of the equation : $x^2 + 3x - 4 = 0$, the numerical value of the expression : $L^2 + 3L + 5$ =…………

a) – 9 b) – 4 c) – 1 d) 5

ans. **L roots** $\rightarrow L^2 + 3L - 4 = 0 \rightarrow L^2 + 3L - 4 + 9 = 0 + 9 = 9$ **(a)**

(135) In the opposite figure:



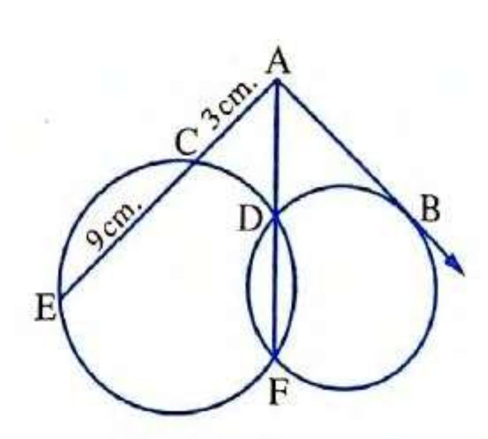
$\frac{BE}{BC} = \ldots\ldots$

a) 1 : 3 b) 1 : 2

c) 2 : 3 d) 3 : 2

ans. $\angle \overline{AD}$ **bisects** $\angle BAC \rightarrow \frac{AB}{AC} = \frac{BE}{EC} \rightarrow \frac{3}{6} = \frac{BE}{EC} = \frac{1}{2} \rightarrow \frac{BE}{BC} = \frac{1}{3}$ **(a)**

(136) In the opposite figure:



If AC = 3 cm, CE = 9 cm,

then AB = …… cm

a) 27 b) 36

c) 9 d) 6

ans. $(AB)^2 = AD \times AF = AC \times AE = 3 \times 12 = 36 \rightarrow AB = 6$ **(d)**

(137) The function $f : f(x) = ax^2 + bx + c = 0$ has one sign in R at ....

a) $b^2 - 4\,ac > 0$

b) $b^2 - 4\,ac < 0$

c) $b^2 - 4\,ac = 0$

d) $b^2 - 4\,ac \geq 0$

ans. $\boldsymbol{b^2 - 4\,ac = 0}$ **(c)**

(138) In the opposite figure:

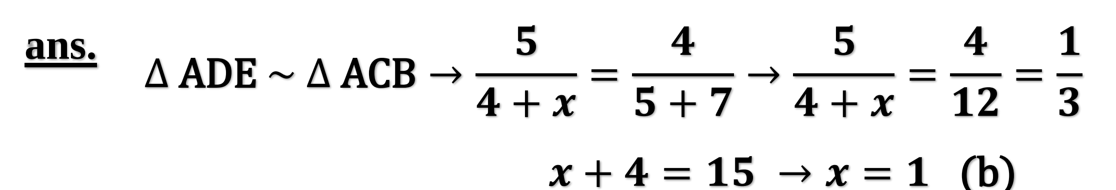
DBCE is cyclic quadrilateral then

EC = ... cm

a) 7 b) 11

c) 12 d) 15

ans.



$$\Delta\, \text{ADE} \sim \Delta\, \text{ACB} \rightarrow \frac{5}{4+x} = \frac{4}{5+7} \rightarrow \frac{5}{4+x} = \frac{4}{12} = \frac{1}{3}$$

$$x + 4 = 15 \rightarrow x = 1 \quad \text{(b)}$$

(139) One of the values of , which satisfies the equation :

$\sin(3\theta + 15°) = \cos(2\theta - 5°)$,where $0° < \theta < 90°$ is ....

a) 10° b) 16° c) 20° d) 36°

ans. $\sin(3\theta + 15) = \cos(2\theta - 5) \rightarrow 3\theta + 15 + 2\theta - 5 = 90 + 360 \times n$

$\rightarrow 5\theta + 10 = 90 + 360\,n \rightarrow 5\theta = 80 + 360\,n \rightarrow \theta = 16 + 72\,n$

$n = 0 \Rightarrow \theta = 16°\,, n = 1 \Rightarrow \theta = 88°$

(140) The solution set of the function: $x^2 + 9 = 0$ in the set of complex numbers is …………

a) $\{-3, 3\}$ b) $\{-3i\}$ c) $\{-3i, 3i\}$ d) $\emptyset$

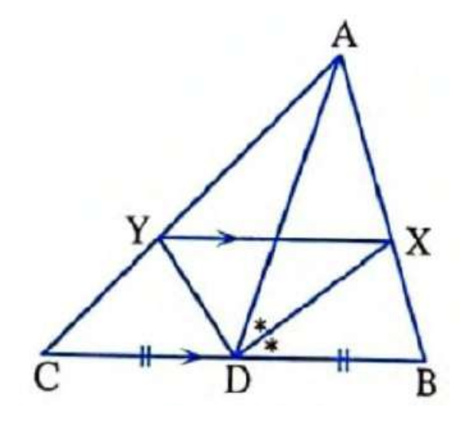
ans.

(141) In the opposite figure:

$m(\angle XDY) = \ldots\ldots$

a) acute angle b) obtuse angle

c) right angle d) straight angle



ans. $\overline{DX}$ **bisects** $\angle$ **ADB then** $\frac{AD}{DB} = \frac{AX}{XB}$

$\overline{YX} = \overline{CB}$, $\frac{Ay}{YC} = \frac{AX}{XB}$

then $\frac{Ay}{YC} = \frac{AD}{DB} = \frac{AD}{DC}$ **then** $\overline{DY}$ **bisects** $\angle$ **ADC**

$m(\angle XDY) = \frac{180}{2} = 90$, **right angle (c)**

(142) If $f(x) = x + 2$ where $x \in]-4, 3[$ then $f(x)$ is positive when $x \in \ldots$

a) $]-\infty, -2[$ b) $]-2, \infty[$ c) $]-4, -2[$ d) $]-2, 3[$

ans. $]-2, 3[$ **(d)**

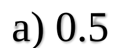
(143) In the opposite figure:

$AB \cap DC = \{ H \}$, AH = 5 cm

HE = 3 cm , HC = 4 cm , DO = 4 cm

$DO \perp BH$, ACBD is cyclic quadrilateral

Then length of EB = …… cm



a) 0.5   b) 1

c) 1.5   d) 2

ans. $\mathbf{DH} = \sqrt{9+16} = 5$

$\mathbf{AH \times HB = DH \times HC}$

$\mathbf{5 \times HB = 5 \times 4}$

HB= 4 , EB = 2 cm (d)

(144) If : $(1+i^4)(1-i^7) = x + iy$, then $x + y = \ldots..$

a) 4   b) 3   c) 2   d) 1

ans. $\mathbf{(1+i^4)(1-i^7) = (1+1)(1+i) = 2+2i}$

$\mathbf{x = 2 , y = 2}$

$\mathbf{x + y = 4}$ **(a)**

(145) In the opposite figure

B , E , C are collinear

If CE = 3 cm , BE = 9 cm ,

BD = 4.5 cm , DE = 6 cm ,

BA = 6 cm , AC = 8 cm then

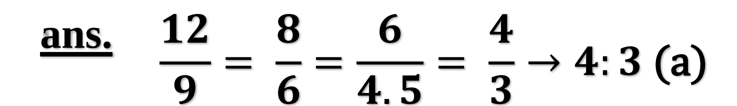
Coefficient of similarity between two

triangles Δ ABC, Δ DBE = ….

a) 4 : 3 b) 3 : 4

c) 16 : 9 d) 9 : 16

ans.



$$\frac{12}{9} = \frac{8}{6} = \frac{6}{4.5} = \frac{4}{3} \to 4:3 \text{ (a)}$$

(146) Measure of central angle which drawn on arc its length equal length of diameter of circle nearest degree is ...... °

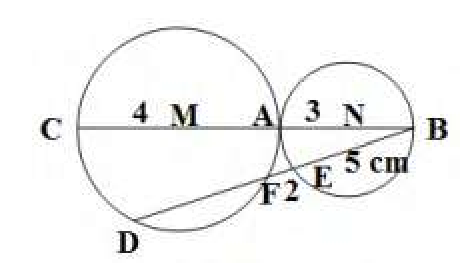
a) 113 b) 115 c) 120 d) 180

ans.

$$\theta^{rad} = \frac{L}{r} = \frac{2r}{r} = 2$$

$$2 \times \frac{180}{\pi} \approx 115°$$

(147) In the opposite figure : If N is circle of radius 3 cm touch circle M of radius 4 cm at A , EB = 5 cm ,
EF = 2 cm then FD = …. cm



a) 12 b) 7

c) 6 d) 5

ans. $\mathbf{BA \times BC = BF \times BD \rightarrow 6 \times 14 = 17 \times BD \rightarrow BD = 12}$

$\mathbf{FD = 12 - 7 = 5\ cm}$

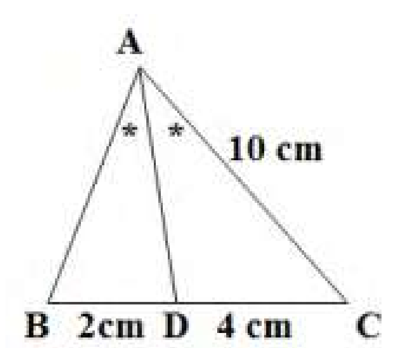
(148) If : tan (180 + 5 θ) + tan (270 + 4 θ) = 0 then value of θ which Satisfy the equation where θ ∈] 0 , 2 π [equals ……..

a) 5 b) 10 c) 20 d) 90

ans. $\mathbf{\tan 5\theta - \cot 4\theta = 0 \rightarrow \tan 5\theta = \cot 4\theta}$

$\mathbf{9\theta = 90 \rightarrow \theta = 10}$

(149) In the opposite figure: If AD interior bisector of ∠ BAC, AC = 10 cm, DC = 4 cm , DB = 2 cm Then length of AD = ….. cm



a) 9 b) 5

c) $\sqrt{42}$ d) $\sqrt{58}$

ans. $\mathbf{\frac{AC}{AB} = \frac{DC}{DB}\ ,\quad \frac{10}{AB} = \frac{4}{2}\ ,\ AD = \sqrt{10 \times 5 - 4 \times 2} = \sqrt{42}\ (c)}$

(150) In the opposite figure : If M is circle , draw AE cut the circle at D , E , draw AC cut the circle at B , C .

If AD = DC m(CE) = 160° then x = …..°

a) 40 b) 30

c) 20 d) 10

ans. $\mathbf{m\angle(A) = \frac{1}{2}[\,m(\widehat{EC}) - m(\widehat{DB})]}$

$$\mathbf{2x = \frac{1}{2}(160 - 4x)}$$

$$\mathbf{4x = 160 - 4x \rightarrow x = 20 \ (c)}$$

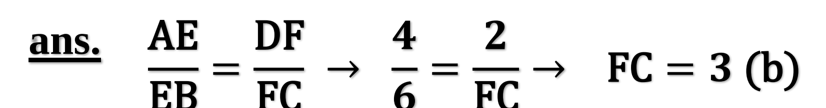
(151) In the opposite figure :

If AD // EF // BC AE = 4 cm , EB = 6 cm ,

DF = 2 cm then the length of CF = …. cm

a) 2 b) 3

c) 4 d) 5

ans. 

$$\mathbf{\frac{AE}{EB} = \frac{DF}{FC} \rightarrow \frac{4}{6} = \frac{2}{FC} \rightarrow \quad FC = 3 \ (b)}$$

(152) If the two roots of the equation: $x^2 + (2k+3)x + k^2 = 0$ are real and equal then $k = \ldots\ldots$

a) $\frac{3}{4}$ b) $-\frac{3}{4}$ c) $\frac{4}{3}$ d) $-\frac{4}{3}$

ans. $\mathbf{b^2 - 4ac = 0}$

$$\mathbf{(2k+3)^2 - 4(1)(k^2) = 0}$$

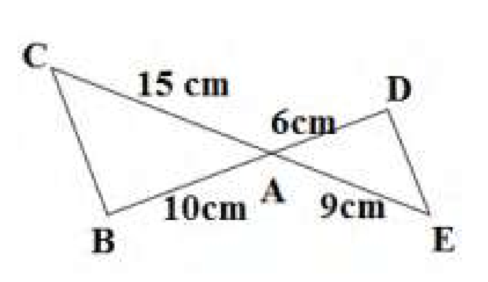
$$\mathbf{4k^2 + 12k + 9 - 4k^2 = 0 \rightarrow \quad k = -\frac{3}{4} \ (b)}$$

(153) DB $\cap$ EC = {A } , AE = 9 cm AB = 10 cm ,

AC = 15 cm , DA = 6 cm,

A(Δ ADE) = 36 cm^2

Then A(Δ ABC) = ………. cm^2



a) 60 b) 75

c) 100 d) 225

ans. $\frac{6}{10} = \frac{9}{15}$ then $\frac{AD}{AB} = \frac{AE}{AC}$ and $m(\angle DAE) = m(\angle CAB)$

Δ DAE ~ Δ BAC

$\frac{A\ (\Delta\ ADE)}{A\ (\Delta\ ABC)} = \frac{9}{25} = \frac{36}{A\ (\Delta\ ABC)} \rightarrow \quad A\ (\Delta\ ABC) = 100\ cm^2$ **(c)**



(154) In the opposite figure : AB touch circle M at B , AE cut circle M at C , E respectively.

If AC = 3 cm, CE = 9 cm

then $P_m(A)$ = …………..

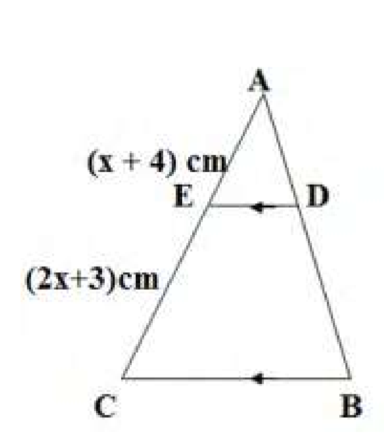
a) 6 b) 9

c) 27 d) 36

ans. $P_M(A) = MC \times ME = 3 \times 12 = 36$ **(d)**

(155) In the opposite figure: If DE // BC ,

AD : AB = 2 : 5 then x = ….



a) 8 b) 6

c) 4 d) 2

ans. $\frac{\mathbf{AD}}{\mathbf{DB}} = \frac{\mathbf{AE}}{\mathbf{EC}} \rightarrow \frac{\mathbf{2}}{\mathbf{3}} = \frac{\boldsymbol{x}+\mathbf{4}}{\mathbf{2}\boldsymbol{x}+\mathbf{3}}$

$\mathbf{4x + 6 = 3x + 12 \quad , x = 6}$ **(b)**

(156) In the opposite figure : AC bisector of interior angle of triangle ABD at $\angle$A , AE $\perp$ AC BC = 4cm , CD = 3cm Then BE : ED = ….. : ……



a) 7 : 4 b) 7 : 3

c) 3 : 4 d) 4 : 3

ans. **$\overline{\mathbf{AE}}$ is an exterior bisector**

$\frac{\mathbf{AB}}{\mathbf{AD}} = \frac{\mathbf{CB}}{\mathbf{CD}} = \frac{\mathbf{EB}}{\mathbf{ED}} = \frac{\mathbf{4}}{\mathbf{3}} \rightarrow \mathbf{4:3}$ **(d)**

(157) If (2 i) is one of the roots of quadratic equation : x^2+ a x + b = 0 Where coefficient of its terms are real numbers then

all the following are true except :

a) The second root is $(-2i)$

b) Sum of two roots of the equation equal zero

c) Product of two roots of the equation equal $= -4$

d) Discriminate of the equation < 0

ans. **product =** $\mathbf{2i \times -2i = -4i^2 = 4}$ **(c)**

(158) If one of the two roots of the equation :

$3x^2 - (k+2)x + k^2 + 2k = 0$ is multiplicative inverse of the other root then k = ….

a) – 3 , 1 b) $-3, -1$ c) $3, -1$ d) 3, 1

ans. $c = a$

$k^2 + 2k - 3 = 0 \rightarrow -3, 1$ **(a)**

(159) If 10 sin x = 6 where x is the greatest positive angle, [0 , 2 π]

Then the numerical value of sec (540 + x) is ………

a) $\frac{3}{5}$ b) $-\frac{5}{4}$ c) $\frac{5}{4}$ d) $-\frac{5}{3}$

ans. $\sin x = \frac{6}{10}$ **in the second quad.** $\cos x = \frac{-8}{10}$

$\sec(540 + x) = \sec(180 + x) = -\sec x = \frac{5}{4}$ **(c)**

(160) If $f(x) = x^2 - 7 + 12$, $x \in$ R **then all the following are true except**

a) Solution set of the equation $f(x) = 0$ is {3, 4}

b) Solution set of the inequality $f(x) > 0$ is R – {3, 4}

c) Solution set of inequality $f(x) < 0$ is] 3, 4 [

d) $f(x)$ is positive at the interval R$-$] 3, 4[

ans. **R – [3 , 4] (b)**

(161) Range of the function $f(x) = 4$ sin x where $x \in$ [0 , π] is ….

a) $[0, 4]$ b) $[0, 4[$ c) $[-4, 0]$ d) $[-4, 4]$

ans. **[0 , 4] (a)**

(162) The S.S. of the equation $x^2 + x - 6 = 0$ is ......

a) $\{2, 3\}$ b) $\{-3, 2\}$ c) $\{-2, -3\}$ d) $\{3, -2\}$

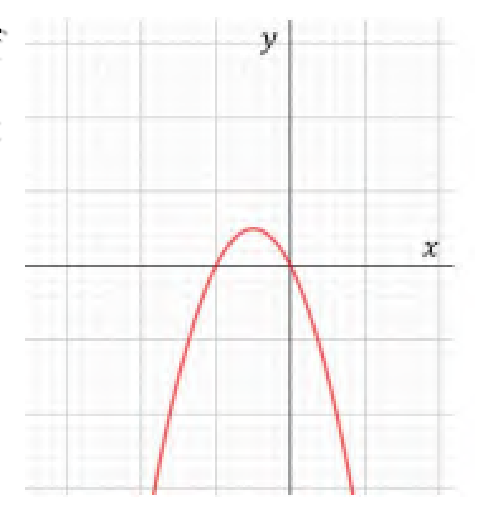
ans. $\{-3, 2\}$ **(b)**

(163) The S.S. of the equation $x^2 = x$ is ......

a) $\{-1\}$ b) $\{0\}$ c) $\{0, 1\}$ d) $\{0, -1\}$

ans. $\{0, 1\}$ **(c)**

(164) The opposite figure represents the curve of a quadratic function f, then the solution set of equation $f(x) = 0$ is ......



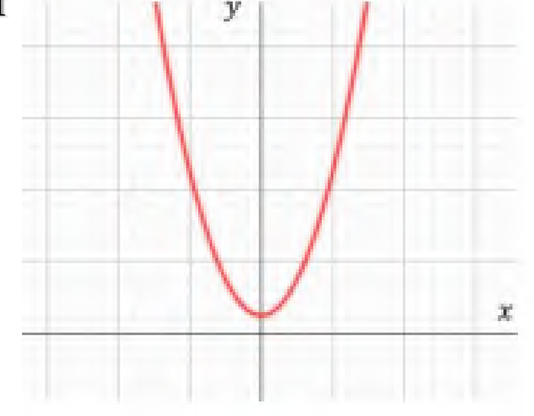


a) $\{-1, 0\}$ b) $\{-1\}$

c) $\{0\}$ d) φ

ans. $\{-1, 0\}$ **(a)**

(165) The opposite figure represents the curve of a quadratic function f, then the two roots of the function $f(x) = 0$ are ......





a) different real roots

b) equal real roots

c) one of them is real and others is complex

d) two conjugate complex root

ans. **two conjugate complex root (d)**

(166) $i^{2019} = ...$

a) i b) $-i$ c) 1 d) – 1

ans. $i^{2019} = i^{2016+3} = i^3 = -i$ **(b)**

(167) The conjugate of the number $i + 2$ is ......

a) $i - 2$ b) $2 - i$ c) $-2 - i$ d) $-i$

ans. $\mathbf{2 - i}$ **(b)**

(168) $(1 + i)^8 =$ ....

a) 16 b) $16\,i$ c) -16 d) $-16\,i$

ans. $\left((\mathbf{1} + \boldsymbol{i})^2\right)^4 = (\mathbf{2}\boldsymbol{i})^4 = \mathbf{16}$ **(a)**

(169) The conjugate of the number $\frac{13}{3-2i}$ is ....

a) $\frac{13}{3+2i}$ b) $3 - 2\,i$ c) $3 + 2\,i$ d) $-3 - 2\,i$

ans. $\frac{\mathbf{13}}{\mathbf{3 - 2}\boldsymbol{i}} = \mathbf{3 + 2}\boldsymbol{i} \rightarrow \mathbf{3 - 2}\boldsymbol{i}$ **(b)**

(170) If the two roots of a quadric equation are $1 + 2\,i$, $1 - 2\,i$, then the quadratic equation is ....

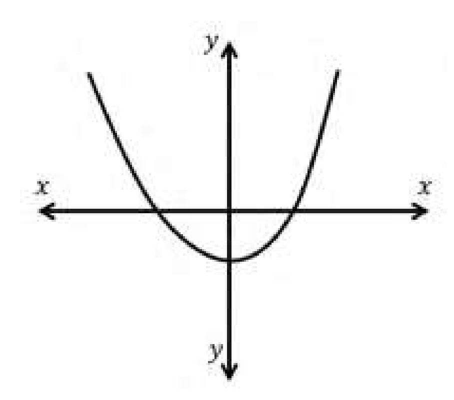
a) $x^2 - 2x + 5 = 0$ b) $x^2 + 2x - 5 = 0$

c) $x^2 - 2x - 5 = 0$ d) $x^2 - 5x + 2 = 0$

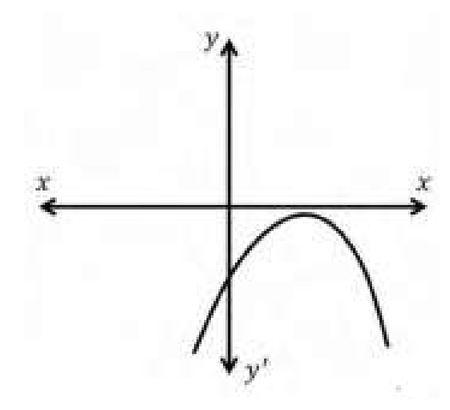
ans. **sum = 2 , product = 5 →** $\boldsymbol{x}^2 - \mathbf{2}\boldsymbol{x} + \mathbf{5} = \mathbf{0}$ **(a)**

(171) The two roots of the quadratic equations are two real different roots in the figure :

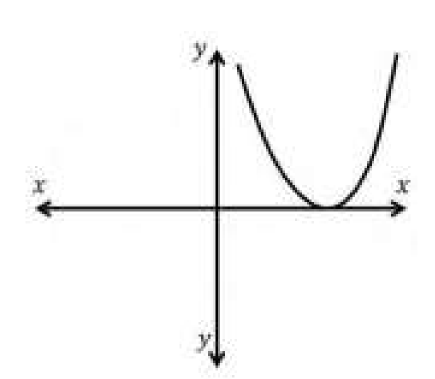
a)



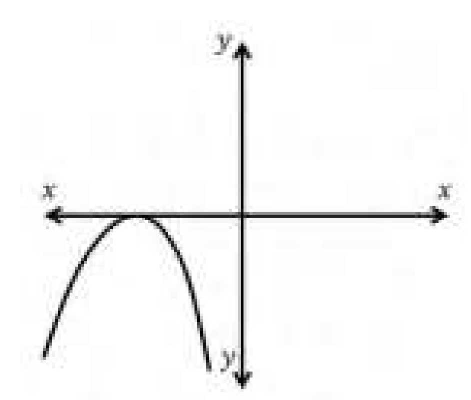
b)



c)



d)



ans. **(a)**

(172) If one root of the quadratic equation $2x^2 - 3x + k = 0$ is the multiplication inverse of the other, then k = ...

a) – 3 b) $\frac{1}{2}$ c) 2 d) 3

ans. **c = a , $k = 2$ (c)**

(173) If $1 + i$ is one of the roots of the equation $x^2 - 2x + a = 0$ then a = ...

a) – 2 b) $-\frac{1}{2}$ c) 0 d) 2

ans. **The other root $\boldsymbol{1 - i}$**

sum = $\boldsymbol{(1 + i) + (1 - i) = 2}$, product = $\boldsymbol{(1 + i)(1 - i) = 2}$

$\boldsymbol{x^2 - 2x + 2 = 0 \rightarrow \quad a = 2}$ **(d)**

(174) If $x = 1$ is one of the two roots of the equation $kx^2 + 6x + k = 0$ then k = ...

a) 6 b) 3 c) 2 d) – 3

ans. $\boldsymbol{k + 6 + k = 0}$, $\boldsymbol{k = -3}$ **(d)**

(175) The two roots of the equation $x^2 + 25 = 0$ are ......

a) $\{-5\}$ b) $\{5\}$ c) $\{5, -5\}$ d) $\{5i, -5i\}$

ans. $\{\boldsymbol{5i, -5i}\}$ **(d)**

(176) The sign of the function f where $f(x) = x - 2$ is positive when $x \in$ ....

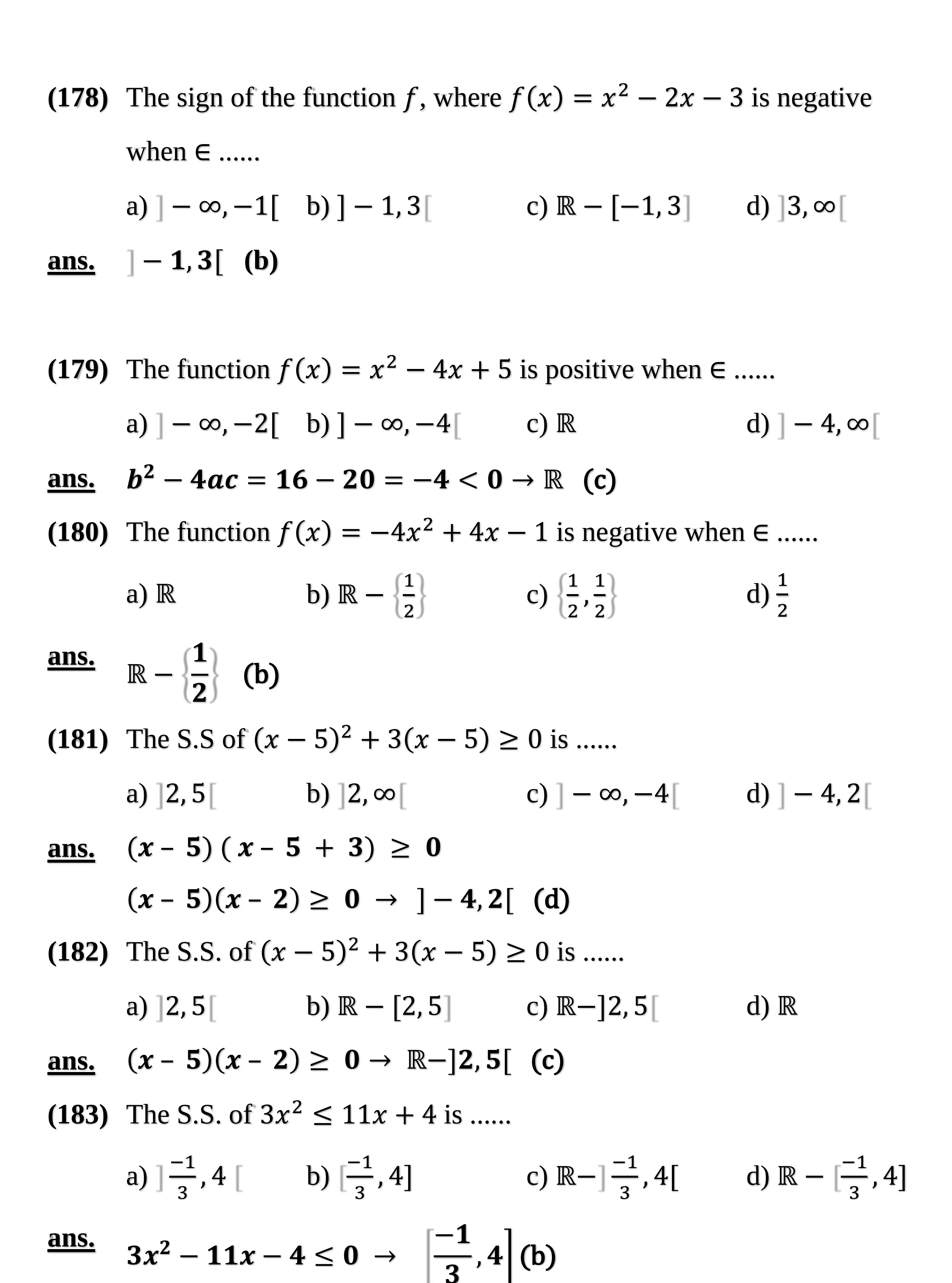
a) $]-\infty, 0[$ b) $]0, \infty[$ c) $]0, 2[$ d) $]2, \infty[$

ans. $]\boldsymbol{2, \infty}[$ **(d)**

(177) The sign of the function f, where $f(x) = 3 - x$ is negative when $x \in$ ......

a) $]3, \infty[$ b) $]-3, \infty[$ c) $]-\infty, 3[$ d) $]-\infty, -3[$

ans. $]\boldsymbol{3, \infty}[$ **(a)**



(178) The sign of the function f, where $f(x) = x^2 - 2x - 3$ is negative when $\in$ ......

a) $]-\infty, -1[$ b) $]-1, 3[$ c) $\mathbb{R} - [-1, 3]$ d) $]3, \infty[$

ans. $\mathbf{]-1, 3[}$ **(b)**

(179) The function $f(x) = x^2 - 4x + 5$ is positive when $\in$ ......

a) $]-\infty, -2[$ b) $]-\infty, -4[$ c) $\mathbb{R}$ d) $]-4, \infty[$

ans. $\boldsymbol{b^2 - 4ac = 16 - 20 = -4 < 0 \rightarrow \mathbb{R}}$ **(c)**

(180) The function $f(x) = -4x^2 + 4x - 1$ is negative when $\in$ ......

a) $\mathbb{R}$ b) $\mathbb{R} - \left\{\frac{1}{2}\right\}$ c) $\left\{\frac{1}{2}, \frac{1}{2}\right\}$ d) $\frac{1}{2}$

ans. $\mathbb{R} - \left\{\mathbf{\frac{1}{2}}\right\}$ **(b)**

(181) The S.S of $(x-5)^2 + 3(x-5) \geq 0$ is ......

a) $]2, 5[$ b) $]2, \infty[$ c) $]-\infty, -4[$ d) $]-4, 2[$

ans. $\boldsymbol{(x - 5)\,(x - 5 + 3) \geq 0}$

$\boldsymbol{(x - 5)(x - 2) \geq 0 \rightarrow\ ]-4, 2[}$ **(d)**

(182) The S.S. of $(x-5)^2 + 3(x-5) \geq 0$ is ......

a) $]2, 5[$ b) $\mathbb{R} - [2, 5]$ c) $\mathbb{R} -]2, 5[$ d) $\mathbb{R}$

ans. $\boldsymbol{(x - 5)(x - 2) \geq 0 \rightarrow \mathbb{R} -]2, 5[}$ **(c)**

(183) The S.S. of $3x^2 \leq 11x + 4$ is ......

a) $]\frac{-1}{3}, 4[$ b) $[\frac{-1}{3}, 4]$ c) $\mathbb{R} -]\frac{-1}{3}, 4[$ d) $\mathbb{R} - [\frac{-1}{3}, 4]$

ans. $\boldsymbol{3x^2 - 11x - 4 \leq 0 \rightarrow \left[\frac{-1}{3}, 4\right]}$ **(b)**

(184) If $f(x) = x + 1, g(x) = 1 - x^2$, then the interval in which the two functions are positive together is ......

a) $]-1, 1[$ b) $]-\infty, -1[$ c) $\mathbb{R} - [-1, 1]$ d) $]1, \infty[$

ans. $]-1, 1[$ **(a)**

(185) The quadratic equation $7x^2 + 14x + c = 0$ has two equal real roots if c = ...

a) 2 b) 7 c) 28 d) 169

ans. $b^2 - 4ac = 0$

$14^2 - 4(7)c = 0 \rightarrow c = 7$ **(b)**

(186) If L, M are the two roots of the equation $x^2 + 5x + 3 = 0$, then the equation whose two roots L + 1, M + 1 is ......

a) $x^2 + 3x - 1 = 0$ b) $x^2 - 3x + 1 = 0$

c) $x^2 - 3x - 5 = 0$ d) $x^2 + 3x - 5 = 0$

ans. $\mathrm{L} + \mathrm{M} = -5$, $\mathrm{L\,M} = 3$

Sum $= \mathrm{L} + 1 + \mathrm{M} + 1 = \mathrm{L} + \mathrm{M} + 2 = -3$

Product $= (\mathrm{L} + 1)(\mathrm{M} + 1) = \mathrm{L\,M} + \mathrm{L} + \mathrm{M} + 1 = -1$

$x^2 + 3x - 1 = 0$ **(a)**

(187) The angle of measure $295°$ lies in the ...... quadrant

a) First b) Second c) Third d) Fourth

ans. **Fourth (d)**

(188) The angle of measure $-750°$ lies in the ...... quadrant

a) First b) Second c) Third d) Fourth

ans. $-750°$ **equivalent** $330°$ $\rightarrow$ **Fourth (d)**

(189) The negative measure the angle whose measure is $260°$ is ......

a) $-10°$ b) $-80°$ c) $-100°$ d) $-120°$

ans. $\mathbf{260 - 360 = -100}$ **(c)**

(190) The negative measure of an angle co – terminal with angle of measure $120°$ is ......

a) $60°$ b) $-60°$ c) $-240°$ d) $-120°$

ans. $\mathbf{120 - 360 = -240}$ **(c)**

(191) The negative measure of an angle co – terminal with an angle of measure $-230°$ is ......

a) $-590°$ b) $-410°$ c) $-130°$ d) $-50°$

ans. $\mathbf{-230 - 360 = -590}$ **(a)**

(192) The smallest positive angle of $-570°$ is ......

a) $-210°$ b) $30°$ c) $150°$ d) $510°$

ans. $\mathbf{-570 + 360 + 360 = 150}$ **(c)**

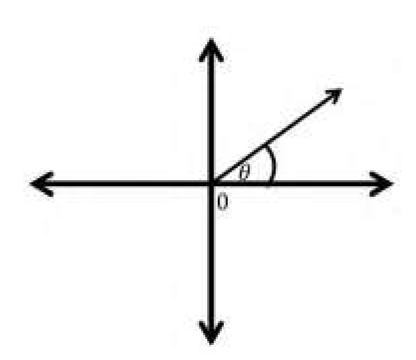
(193) $1^{\text{rad}} = ...$

a) $\frac{\pi}{8}$ b) $\frac{\pi}{2}$ c) $57°17'45''$ d) $45°17'57''$

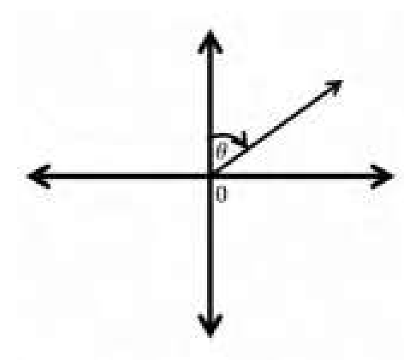
ans. $\mathbf{1 \times \frac{180}{\pi} = 57°17'45''}$ **(c)**

(194) The figure which represents angle θ in the standard position is ......

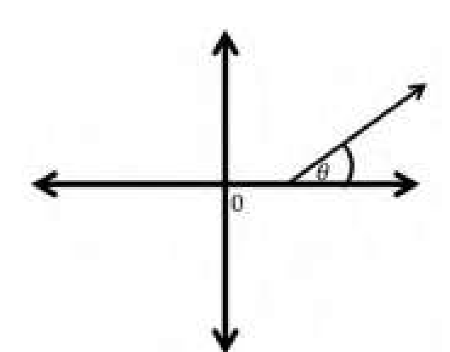
a)



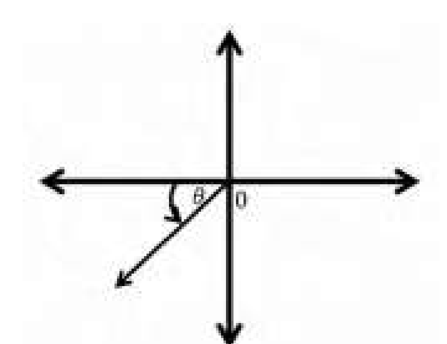
b)



c)



d)



ans. **(a)**

(195) The measure of the length of an arc opposite to a central angle of measure $\frac{5\pi}{12}$ in a circle of radius length 8 cm ≃ ...... cm

a) $\frac{12\pi}{5}$ b) 8 c) 5π d) 10.5

ans. $\mathbf{L = \frac{5\pi}{12} \times 8 \cong 10.5\ cm}$ **(d)**

(196) $1.2^{\text{rad}} \simeq$ ......

a) $\frac{\pi}{3}$ b) $18°45'68''$ c) $68°45'18''$ d) $\frac{\pi}{2}$

ans. $\mathbf{1.2\ rad \times \frac{180}{\pi} = 68°45'18''}$ **(c)**

(197) If the measures of two angles of a triangle are $75°, \frac{\pi}{4}$ then the radian measure of the third angle = ...

a) $\frac{\pi}{6}$ b) $\frac{\pi}{4}$ c) $\frac{\pi}{3}$ d) $\frac{5\pi}{12}$

ans. $\mathbf{180 - (75 + 45) = 60° \rightarrow \frac{\pi}{3}}$ **(c)**

(198) The arc length in a circle of diameter length 24 cm and opposite to a central angle of measure $30°$ is ...... cm

a) 2π b) 3π c) 4π d) 5π

ans. $\mathbf{L = 12 \times \frac{\pi}{6} \rightarrow 2\pi}$ **(a)**

(199) The measure of the angle of a regular hexagon is ......

a) $\frac{\pi}{3}$ b) $\frac{2\pi}{3}$ c) $\frac{4\pi}{3}$ d) $\frac{5\pi}{3}$

ans. $\mathbf{120 \times \frac{\pi}{180} \rightarrow \frac{2\pi}{3}}$ **(b)**

(200) All the measures of the following angles are equivalent to the measure $75°$ in the standard position except ....

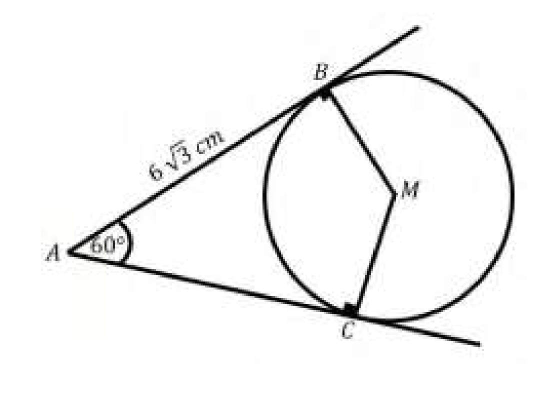
a) $-285°$ b) $-645°$ c) $285°$ d) $435°$

ans. $\mathbf{285°}$ **(c)**

(201) In the opposite:

The length of the greater arc

$\widehat{BC} = ...$



a) 8π cm   b) 4π cm

c) $\frac{4}{3}\pi$ cm   d) $4\sqrt{3}$ cm

ans. **join $\overline{AM}$, $m(\angle BAM) = 30°$**

$$\tan 30 = \frac{r}{6\sqrt{3}}, r = 6 \text{ cm}$$

$$m(\angle \text{reflex } BMC) = 360 - 120 = 240°$$

$$L = r \times \theta^{rad} = 6 \times \left(\frac{240 \times \pi}{180}\right)$$

8π cm (a)

(202) If the angle θ drawn in the standard position, and its terminal side intersects the unit circle at $\left(\frac{3}{5}, d\right)$, then $\sin\theta = ...$

a) $\frac{3}{5}$ b) $\frac{4}{5}$ c) $-\frac{4}{5}$ d) $\pm\frac{4}{5}$

ans. $\sin\theta = \pm\frac{4}{5}$ **(d)**

(203) If $\tan(180° + \theta) = 1, \theta$ is the measure of the smallest (+ve) angle, then = ...

a) 45°   b) 225°   c) 135°   d) 315°

ans. $\tan\theta = 1 \rightarrow \theta = 45°$ **(a)**

(204) If $\sin 2A = \cos 4A$, where A is positive acute angle then

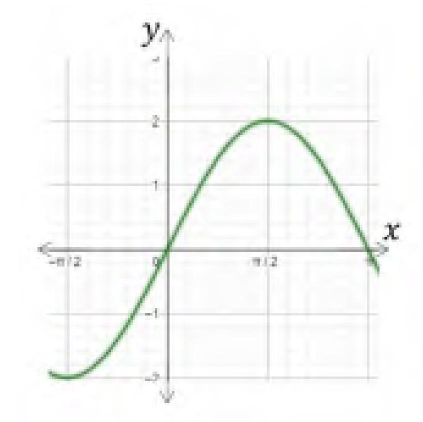
$\cos(90° - 2A) = ...$

a) 0 b) $\frac{\sqrt{3}}{2}$ c) $\frac{1}{2}$ d) $\frac{1}{\sqrt{2}}$

ans. $\mathbf{2A + 4A = 90° \rightarrow 6A = 90° \rightarrow A = 15°}$

$\mathbf{\cos(90 - 30) = \frac{1}{2}}$ **(c)**

(205) The opposite graph represents the function ....



a) $2\sin x$ b) $\frac{1}{2}\sin x$

c) $\sin 2x$ d) $\sin\frac{x}{2}$

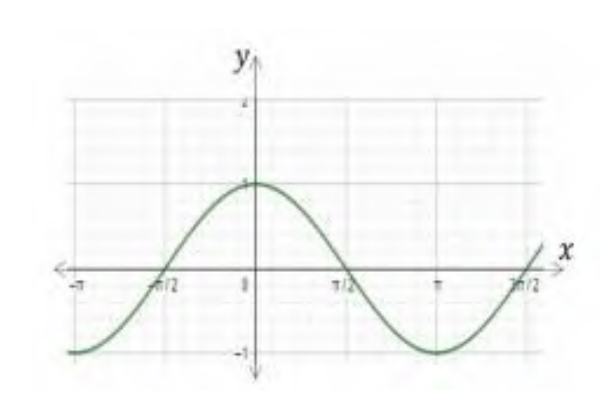
ans. $\mathbf{2\sin x}$ **(a)**

(206) $\cos 2\theta \in ......$, where $\theta \in [-2\pi, 2\pi]$

a) $[-1, 1]$ b) $[-\infty, \infty[$ c) $]-1, 1[$ d) $[-2, 2]$

ans. $[\mathbf{-1, 1}]$ **(a)**

(207) The opposite graph represents the function ......



a) $\cos x$ b) $\cos\frac{x}{2}$

c) $\sin x$ d) $2\cos x$

ans. $\mathbf{\cos x}$ **(a)**

(208) If the ratio between the perimeters of two similar polygon is $\frac{4}{9}$, then the ratio between their areas is ......

a) $\frac{2}{3}$ b) $\frac{4}{9}$ c) $\frac{16}{81}$ d) $\frac{8}{9}$

ans. $\left(\frac{4}{9}\right)^2 = \frac{16}{81}$ **(c)**

(209) If the ratio between the area of two similar polygon is $\frac{25}{64}$, then the ratio between their perimeters is ......

a) $\frac{5}{8}$ b) $\frac{25}{64}$ c) $\frac{\sqrt{5}}{2\sqrt{2}}$ d) $\frac{25}{8}$

ans. $\frac{\text{perimeter}}{\text{perimeter}} = \frac{\sqrt{25}}{\sqrt{64}} \to \frac{5}{8}$ **(a)**

(210) $\frac{\sec 40°}{\csc 50°} + \frac{\sin 50°}{\cos 40°} + \frac{\tan 100°}{\tan 80°} = \ldots\ldots$

a) – 1 b) 1 c) 2 d) 3

ans. $1 + 1 - 1 = 1$ **(b)**

(211) If $\sin 2\theta = \cos\theta$, then the general solution is ......

a) $\{30°, 90°\}$ b) $\left\{-\frac{\pi}{2}, -2n\pi\right\}$

c) $\left\{\frac{\pi}{6}, \frac{2n\pi}{3}\right\}$ d) $\left\{\frac{\pi}{2} + 2n\pi, \frac{\pi}{6} + \frac{2n\pi}{3}\right\}$

ans. $2\theta \pm \theta = 90 + 2\,n\pi$

$3\theta = 90 \to \quad \theta = 30\ , \theta = 90 \ \to \quad \{30°, 90°\}$ **(a)**

(212) $\sin\left(\theta - \frac{\pi}{2}\right) = \ldots\ldots.$

a) $\cos\theta$ b) $-\cos\theta$ c) $\sin\theta$ d) $-\sin\theta$

ans. $\sin\left(\theta - \frac{\pi}{2}\right) = -\sin\left(\frac{\pi}{2} - \theta\right) \rightarrow -\cos\theta$ **(b)**

(213) $\tan 1° \times \tan 2° \times \tan 3° \times \ldots \times \tan 89° = \ldots\ldots$

a) 1 b) zero c) – 1 d) ∞

ans. $\tan 89 = \tan(90 - 1) = \cot 1, \ldots\ldots$

$\tan(1) \times \tan(2) \times \ldots\ldots \times \tan(45) \times \ldots\ldots \times \cot(2) \times \cot(1) \rightarrow$ **1 (a)**

(214) $\sin 1° + \sin 2° + \sin 3° + \sin 4° + \ldots + \sin 360° = \ldots\ldots$

a) – 1 b) zero c) $\frac{1}{\sqrt{2}}$ d) 1

ans. $\sin 359 = \sin(360 - 1) = -\sin 1, \ldots\ldots$

$\sin 1 + \sin 2 + \ldots\ldots - \sin 2 - \sin 1 + 0 = 0 \rightarrow$ **zero (b)**

(215) $\cos 0° + \cos 1° + \cos 2° + \ldots + \cos 360° = \ldots\ldots$

a) – 1 b) zero c) 1 d) 2

ans. $\cos 179 = \cos(180 - 1) = -\cos 1, \ldots\ldots$

$\cos 181 = \cos(180 + 10) = -\cos 1, \cos 359 = \cos(360 - 1)$

$= \cos 1, \ldots\ldots$

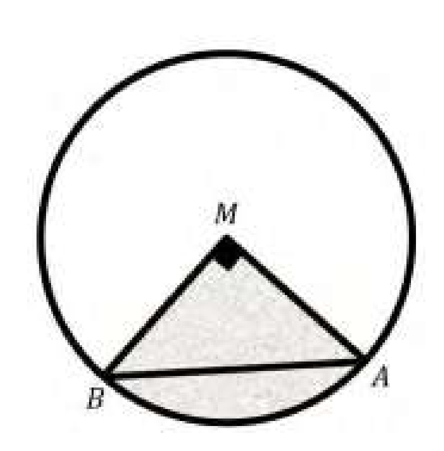
$\cos 0 + \cos 1 + \ldots\ldots - \cos 1 + \cos(180) + \ldots\ldots + \cos(360) = 1$ **(c)**

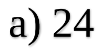
(216) If $2\sin x - 1 = 0, x \in [0, 2\pi]$ then $\in \ldots\ldots$

a) $\left\{\frac{\pi}{6}\right\}$ b) $\left\{\frac{5\pi}{6}\right\}$ c) $\left\{\frac{\pi}{6}, \frac{5\pi}{6}\right\}$ d) $\left[0, \frac{\pi}{2}\right]$

ans. $\sin x = \frac{1}{2} \rightarrow x = 30° \text{ or } x = 150° \rightarrow \left\{\frac{\pi}{6}, \frac{5\pi}{6}\right\}$ **(c)**

(217) If the area of Δ AMB = $32\ \text{cm}^2$ then the perimeter of the shaded region is ......





a) 24   b) $16 + 8\sqrt{2}$

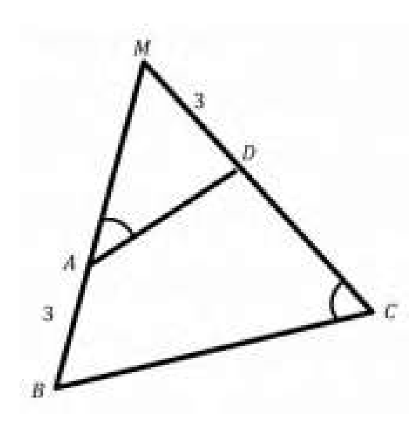
c) $16 + 4\pi$ d) $4 + 16\pi$

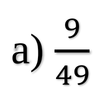
ans. $\frac{1}{2}r^2 = 32 \rightarrow r = 8$

$$L = r \times \theta^{rad} = 8 \times \frac{90 \times \pi}{180} = 4\pi \rightarrow \quad 16 + 4\pi \quad (c)$$

(218) If ABCD is a cyclic quad

Area of Δ MAD : Area of quad D = ...





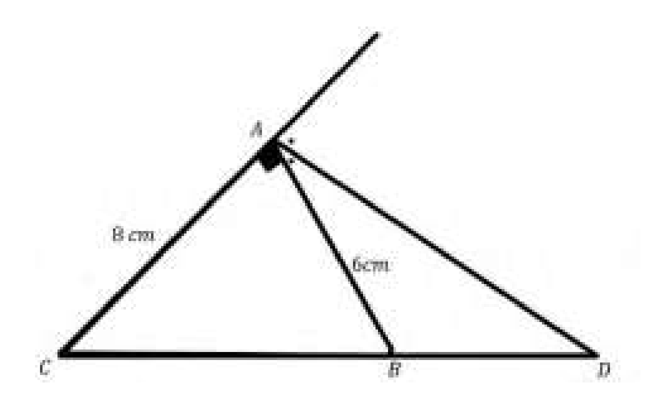
a) $\frac{9}{49}$ b) $\frac{40}{49}$

c) $\frac{9}{40}$ d) $\frac{40}{9}$

ans.

(219) In the opposite figure:

A(Δ ABD) = ...



a) 36   b) 48

c) 54   d) 72

ans. $BC = \sqrt{36 + 64} = 10 \quad h = 4.8$ cm

$$\frac{AB}{AC} = \frac{DB}{DC} = \frac{6}{8} = \frac{DB}{DB + 10} \rightarrow BD = 30$$

$$A(\Delta ABD) = \frac{1}{2} BD \times h = \frac{1}{2} \times 30 \times 4.8 = 72 \text{ cm}^2$$

$$\text{or } \frac{A(\Delta ABC)}{A(\Delta ABD)} = \frac{BC}{BD} = \frac{2}{6} \quad \text{(have a common vertex)}$$

$$\frac{\frac{1}{2} \times 8 \times 6}{A(\Delta ABD)} = \frac{2}{6}, A(\Delta ABD) = 72 \text{ cm}^2 \quad \text{(d)}$$

(220) The curve of sin wave is symmetric about ......

a) $x - axis$ b) $y - axis$ c) original point d) y = 1

ans. **original point (c)**

(221) The curve of $f(x) = \cos x$ is symmetric about ......

a) $x - axis$ b) $y - axis$ c) original d) $y = -1$

ans. $\boldsymbol{y - axis}$ **(b)**

(222) The range of the function $f(x) = \sin x$ is ......

a) $[0, 2\pi]$ b) $]-1, 1[$ c) $[-1, 1]$ d) $[-2\pi, 2\pi]$

ans. $\boldsymbol{[-1, 1]}$ **(c)**

(223) If $\sin x = \frac{9}{4}, 90° \leq x \leq 180°$, then $\tan(360° - x) =$ ......

a) $-\frac{4}{3}$ b) $-\frac{3}{4}$ c) $\frac{3}{4}$ d) $\frac{4}{3}$

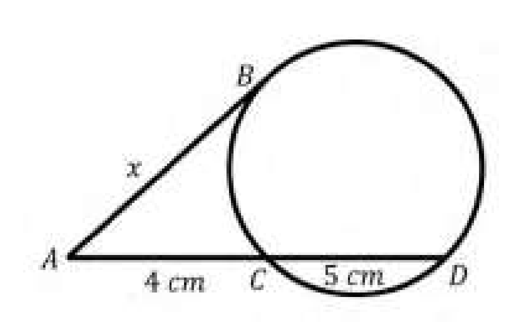
ans. $\frac{\sin x \; 4}{5}$ $, \tan(360 - x) = -\tan x \rightarrow \frac{-4}{3}$ **(a)**

(224) In the opposite:

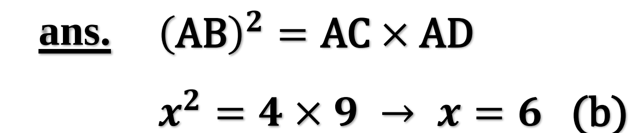
$x = ...$ cm

a) 3 b) 6

c) 9 d) 36



ans.



$(AB)^2 = AC \times AD$

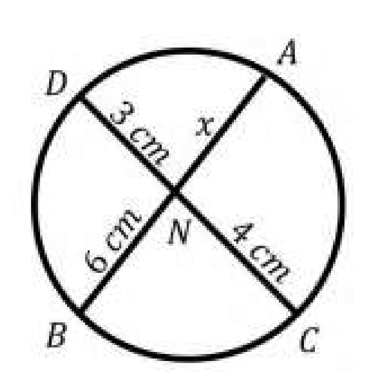
$x^2 = 4 \times 9 \rightarrow x = 6$ **(b)**

(225) In the opposite figure:

$x = ...$ cm

a) 2 b) 4

c) 12 d) 8



ans. $AN \times N = DN \times NC$

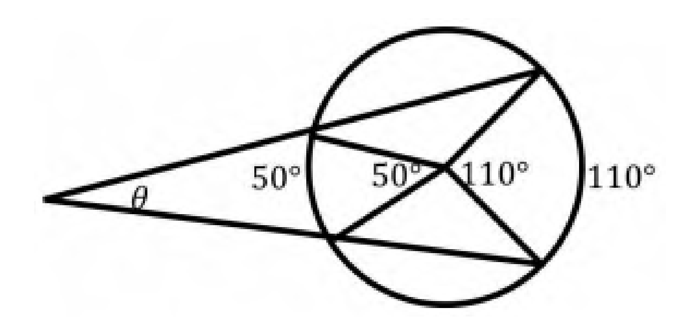
$6x = 12 \rightarrow x = 2$ **(a)**

(226) In the opposite figure:

$\theta = ...\ °$

a) 30° b) 50°

c) 60° d) 160°



ans. $\theta = \frac{1}{2}(110 - 50) \rightarrow 30°$ **(a)**

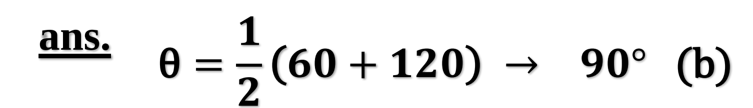
(227) In the opposite figure:

If $m(\widehat{CB}) = \frac{1}{2}\, m(\widehat{AD}) = 60°$

then = ... °

a) 45° b) 90°

c) 120° d) 105°

ans. 

$$\theta = \frac{1}{2}(60 + 120) \rightarrow 90° \quad (b)$$

(228) In the opposite figure:

If the polygon ABCD ~ XYZL

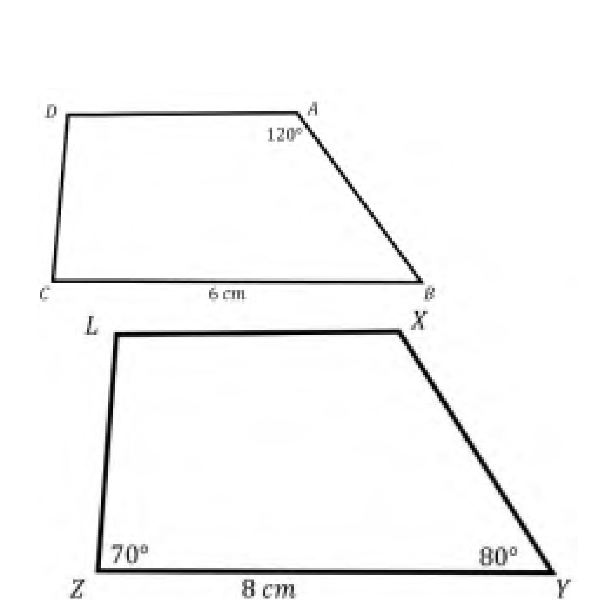
If the perimeter of ABCD = 24 cm

, then the perimeter of polygon

XYZL = ... cm

a) 16 b) 18

c) 32 d) 64



ans. 

$$\frac{24}{\text{perimeter XYZL}} = \frac{6}{8} \rightarrow 32 \quad (c)$$

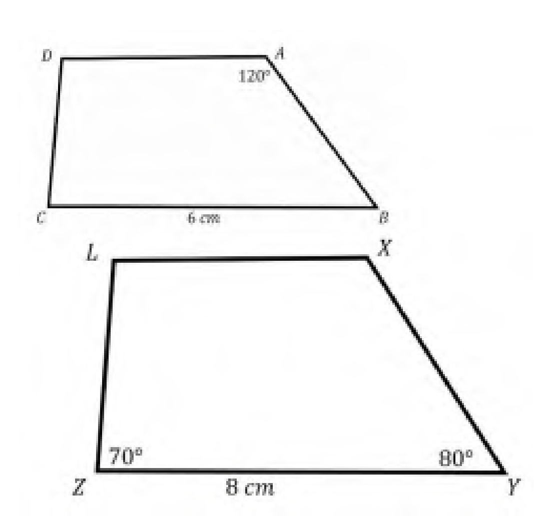
(229) In the opposite figure:

If the two polygons are similar

m(∠X) = ...

a) 70° b) 80°

c) 90° d) 120°



ans. $m(\angle X) = m(\angle A) \rightarrow \mathbf{120°}$

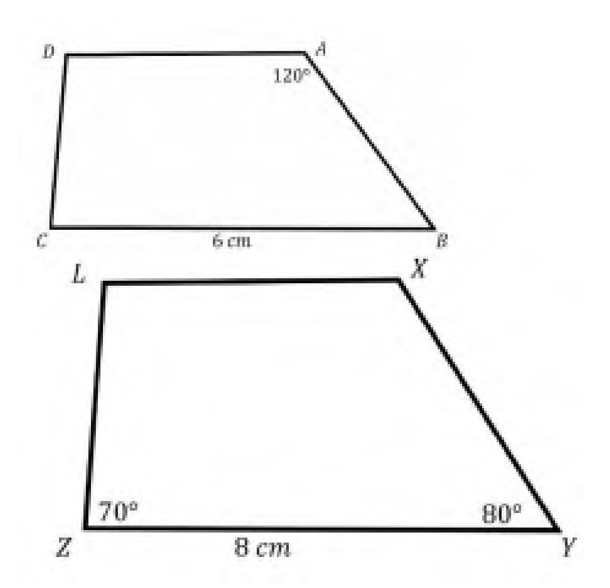
(230) In the opposite figure:

If the polygon ABCD ~ XYZL

If the area of ABCD $= 36\ \text{cm}^2$

,then the area of the polygon

XYZL = ... cm



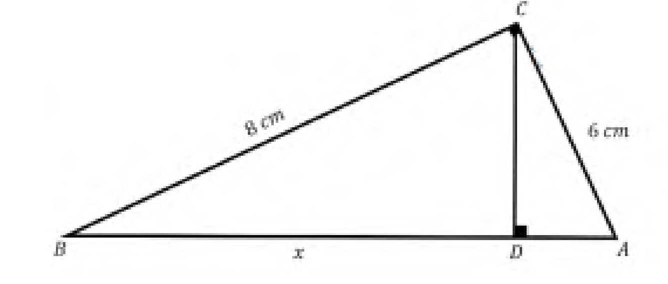
a) 24 b) 32

c) 48 d) 64

ans. $\left(\frac{6}{8}\right)^2 = \frac{9}{16} = \frac{36}{\text{area XYZL}} \rightarrow \mathbf{64}$ **(d)**

(231) In the opposite figure:

$x =$ ...... cm



a) 6.4 b) 3.6

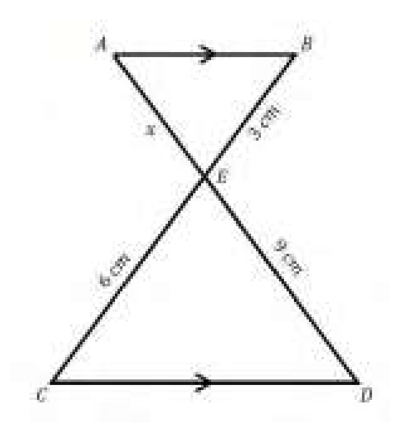
c) 10 d) 4.8

ans. $(\text{CB})^2 = \text{BD} \times \text{BA}$

$\mathbf{64 = x \times 10 \rightarrow 6.4}$ **(a)**

(232) In the opposite figure:

$x =$ ...... cm



a) 2 b) 3

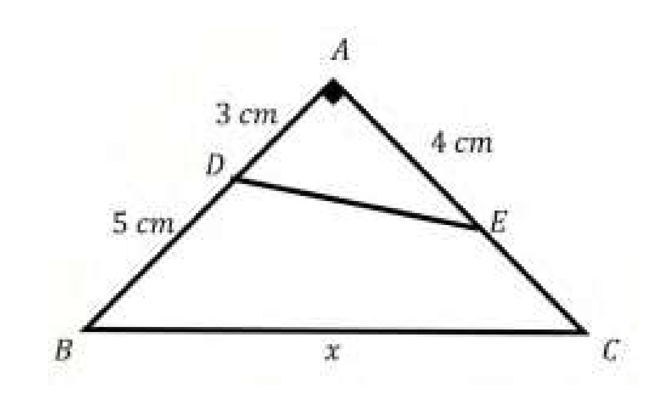
c) 4.5 d) 5

ans. $\frac{3}{6} = \frac{x}{9} \rightarrow \mathbf{4.5}$ **(c)**

(233) In the opposite figure:

DECB is cyclic quadrilateral,

$x =$ ....



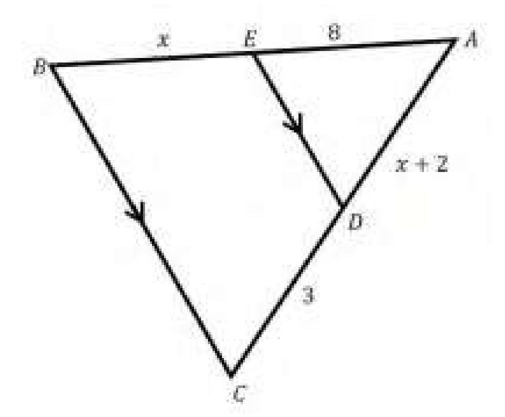
a) 5 b) 8

c) 9 d) 10

ans. $\frac{4}{8} = \frac{5}{x} \rightarrow$ **10 (d)**

(234) In the opposite figure:

$x =$ ...... cm

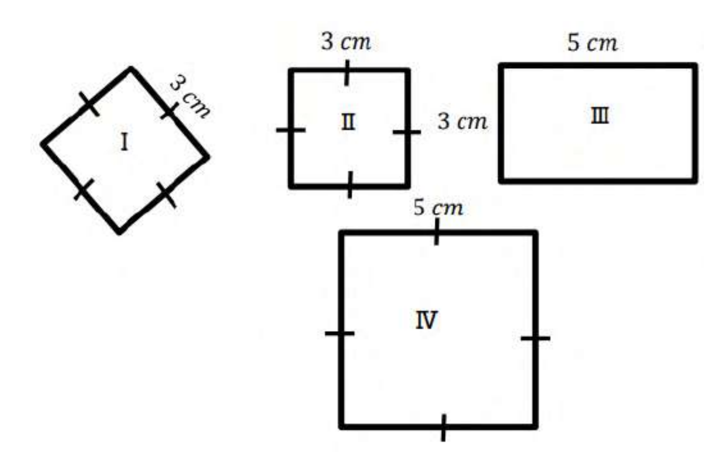


a) – 6 b) 3

c) 4 d) 6

ans. $\frac{8}{x} = \frac{x+2}{3}$, $x^2 + 2x = 24 \rightarrow$ $x = 4$ **(c)**

(235) Which of the following are similar ......



a) I , II b) II , IV c) I , III d) I , IV

ans. **II , IV (b)**

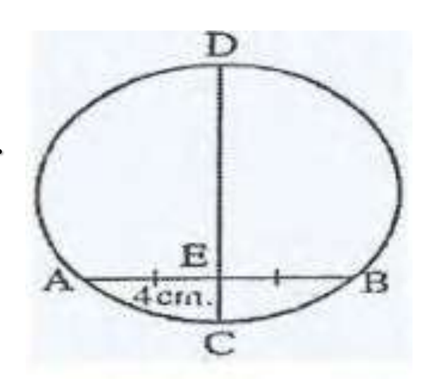
(236) The ratio between two perimeters of two similar triangle is 4 : 9, then the ratio between their area is ......

a) 4 : 9 b) 2 : 3 c) 16 : 81 d) 9 : 4

ans. **16 : 81 (c)**

(237) In the opposite figure:

AB = 12 cm, CE = 4 cm, then ED = ...



a) 5 b) 6

c) 8 d) 9

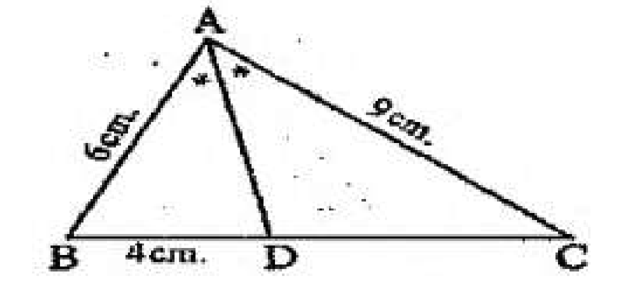
ans. $\mathbf{AE \times EB = DE \times EC}$

$\mathbf{6 \times 6 = 4 \times ED \rightarrow ED = 9}$ **(d)**

(238) In the opposite figure:

AC = 9 cm, AB = 6 cm, BD = 4 cm

, then BC = ...



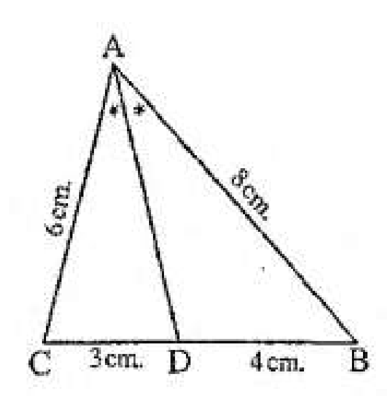
a) 12 b) 16

c) 8 d) 10

ans. $\mathbf{\frac{6}{9} = \frac{4}{DC} \rightarrow}$ $\mathbf{DC = 6\ cm \rightarrow BC = 10\ cm}$

(239) In the opposite figure:

AD = ... cm



a) 4 b) 8

c) 6 d) 5

ans. $\mathbf{AD = \sqrt{6 \times 8 - 3 \times 4} = 6}$ **(c)**

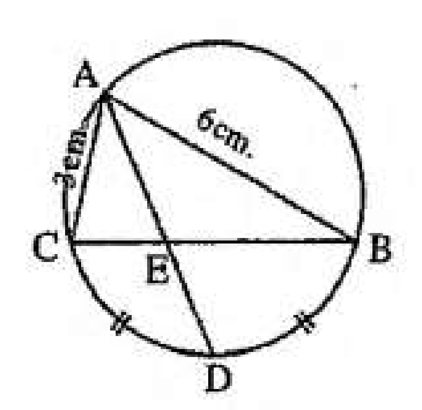
(240) In the opposite figure:

AB = 6 cm, AC = 3 cm, then

CE : CB = ...

a) 1 : 2 b) 1 : 3

c) 3 : 1 d) 2 : 1



ans. $\mathbf{\overline{AD}\ \text{bisects}\ (\angle CAB) \rightarrow \frac{CE}{EB} = \frac{3}{6} = \frac{1}{2} \rightarrow\ CE{:}CB = 1:3}$ **(b)**

(241) In the opposite figure if:

i) AE = 4 cm, AB = 10 cm, ED = 3 cm

then CD = ... cm

a) 8 b) 5

c) 11 d) 24

ii) If $m(\angle AED) = 70°, m(\widehat{AD}) = 50°$, then $(\widehat{BC}) =$ ......

a) 70 b) 90 c) 100 d) 140

ans. $\mathbf{i)\ AE \times EB = BE \times EC}$

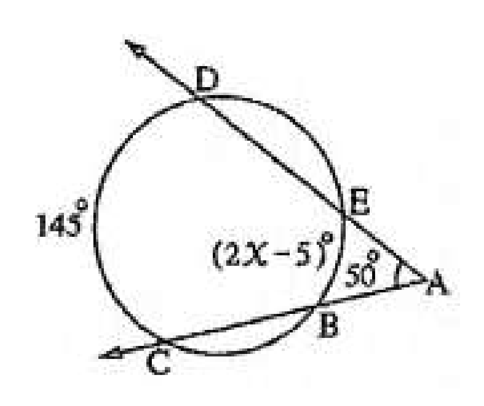
$\mathbf{4 \times 6 = 3 \times EC\ ,\ EC = 8\ cm \rightarrow CD = 8 + 3 = 11}$ **(c)**

$\mathbf{ii)\ 2 \times 70 = 50 + m(\widehat{CB}) \rightarrow\ m(\widehat{CB}) = 90}$ **(b)**

(242) In the opposite figure:

$m(\widehat{CD}) = 145°, m(\widehat{EB}) = 2(x-5)°$

and $(\angle A) = 50°$, then $x =$ .... °



a) 80 b) 50

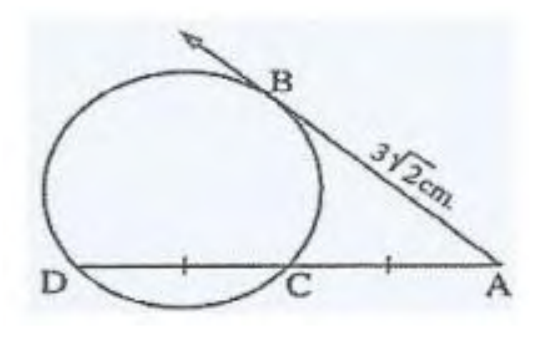
c) 25 d) 15

ans. $\mathbf{2\,m(\angle A) = m(\angle \widehat{DC}) - m(\widehat{EB})}$

$\mathbf{100 = 145 - (2x-5) \rightarrow x = 25°}$ **(c)**

(243) In the opposite figure:

$\overrightarrow{AB}$ is a tangent to the circle and C is midpoint of $\overline{AD}$, then CD = ... cm



a) 9 b) 3

c) $\frac{1}{3}$ d) $\frac{1}{9}$



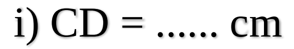
ans. **Let CD =** $\boldsymbol{x}$

$\mathbf{(AB)^2 = AC \times AD \rightarrow (3\sqrt{2})^2 = x(2x) \rightarrow CD = 3\ cm}$



(244) In the opposite figure If:

$\overrightarrow{AD}$ bisects exterior $\angle$ A, then



i) CD = ... cm

a) 2 b) 6

c) 4 d) 8

ii) AD = ... cm

a) $2\sqrt{10}$ b) 40 c) $4\sqrt{10}$ d) $10\sqrt{2}$

ans. **i) Let CD = x**

$$\frac{\mathbf{AB}}{\mathbf{AC}} = \frac{\mathbf{DB}}{\mathbf{DC}} \rightarrow \frac{8}{4} = \frac{6+x}{x} \rightarrow x = 6 \quad \text{(b)}$$

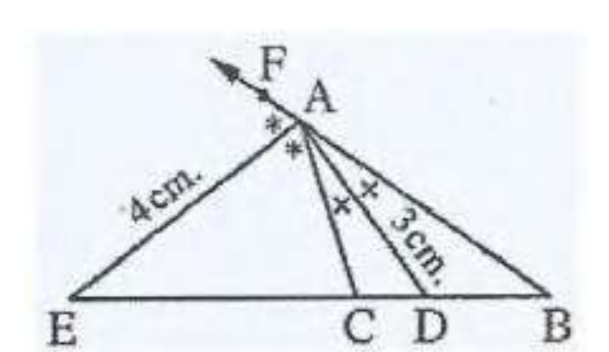
ii) $\mathbf{AD} = \sqrt{12x6 - 8\,x\,4} = 2\sqrt{10}$ **(a)**

(245) $\overrightarrow{AD}$ bisects ∠ A internally,

$\overrightarrow{AE}$ bisects ∠ A externally

AD = 3 cm, AE = 4 cm, then

DE = ... cm



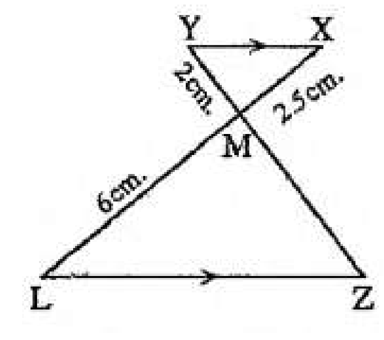
a) 3 b) 4

c) 5 d) 6

ans. $\overline{\mathbf{AE}}$ **and** $\overline{\mathbf{AD}}$ **are two bisectors** $\rightarrow \overline{\mathbf{AE}} \perp \overline{\mathbf{AD}} \rightarrow \mathbf{ED} = \sqrt{9+16} = 5$ **(c)**

(246) In the opposite figure:

Length of $\overline{MZ}$ = ... cm

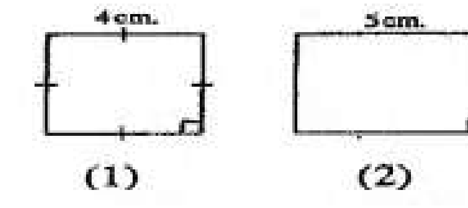


a) 3.6 b) 4.2

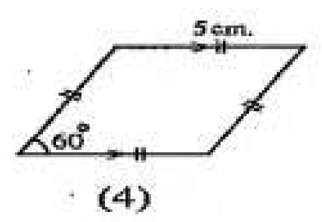
c) 4 d) 4.8

ans. $\frac{\mathbf{2}}{\mathbf{MZ}} = \frac{\mathbf{2.5}}{\mathbf{6}} \rightarrow \mathbf{MZ = 4.8\ cm}$

(247) Which two polygons of the following are similar?



4cm.
120°
(3)



a) polygons **(1)**, **(2)** b) polygons **(1)**, **(3)**

c) polygons **(3)**, **(4)** d) polygons **(2)**, **(4)**

ans. **polygons (3), (4) (c)**

(248) In the opposite figure:

AB = 3 cm, BC = 2 cm, AF = 7.4 cm

Find the length of : $\overline{EF}$

a) 2 b) 3

c) 5.5 d) 7.5



ans. $\mathbf{AB \times AC = AE \times AF \rightarrow \quad 3 \times 5 = x \times 7.5 \rightarrow x = 2}$

$\mathbf{EF = 7.5 - 2 = 5.5\ cm}$ **(c)**

(249) In the opposite figure:

$\overline{AX}$ // $\overline{BY}$ // $\overline{CZ}$, XY = 3 cm,

FA = 6 cm , BC = 7.5 cm , FX = 4 cm

Then: $\frac{\overline{AB}}{\overline{ZY}}$ = ...

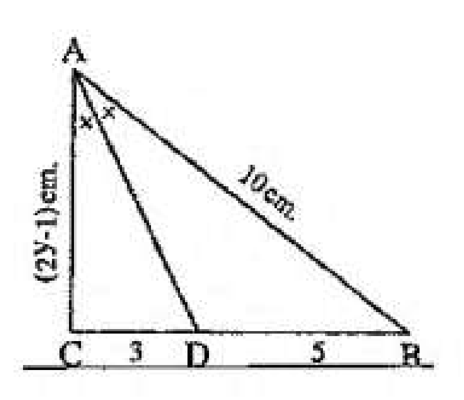
a) 4.5 b) 5

c) 9.5 d) 10.5

ans. $\mathbf{\frac{FX}{XY} = \frac{FA}{AB} \rightarrow \frac{4}{3} = \frac{6}{AB} \rightarrow \quad AB = 4.6\ cm}$

$\mathbf{\frac{XY}{YZ} = \frac{AB}{BC} \rightarrow \frac{3}{YZ} = \frac{4.5}{7.5} \rightarrow YZ = 5 \Rightarrow \frac{AB}{YZ} = \frac{4.5}{5} = 0.9}$

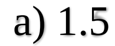
(250) In the opposite figure:



$\overrightarrow{AD}$ bisects $\angle$ A , $\frac{BD}{DC} = \frac{5}{3}$

If AB = 10 cm, AC = $(2\,y - 1)$ cm

then y = ... cm



a) 1.5   b) 3.5

c) 6   d) 10

<u>**ans.**</u> $\mathbf{\frac{10}{2y-1} = \frac{5}{3} \rightarrow 2y - 1 = 6 \rightarrow y = 3.5}$ **(b)**

(251) In the opposite figure:

$\overline{BA} \perp \overline{AE}$, $\overline{CD} \perp \overline{DE}$,

AB $= (x + 7)$ cm, AE = 9 cm,

ED = 3 cm, DC = 4 cm

Find the value of : x

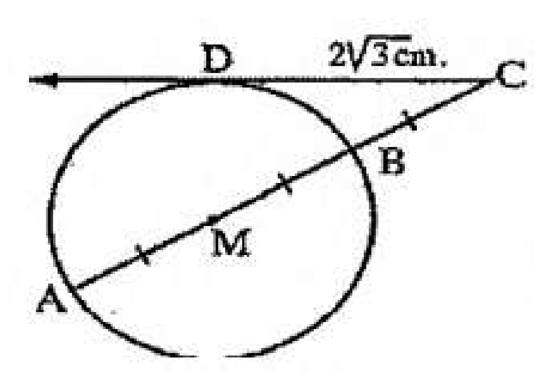
a) 3   b) 4

c) 5   d) 7

<u>**ans.**</u> **Δ CDE ~ Δ BAE**

$\mathbf{\frac{4}{x+7} = \frac{3}{9} \rightarrow x + 7 = 12 \rightarrow x = 5}$ **(c)**

(252) In the opposite figure:



$\overrightarrow{CD}$ is tangent to circle M,

AM = MB = BC , DC = $2\sqrt{3}$

Find the diameter length of the circle M

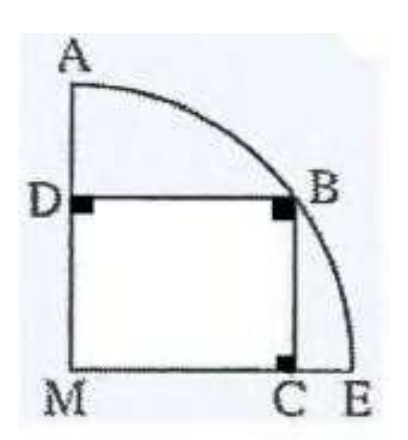
a) $4\sqrt{3}$ b) 4

c) 6 d) 10

ans. Let BC = MB = MA = x

$$\left(2\sqrt{3}\right)^2 = x\,(3x) \;\rightarrow\; x = 2 \;\rightarrow \text{diameter} = 4 \text{ cm}$$

(253) In the opposite figure:



A quarter circle, BCMD is a rectangle, which is drawn inside it, where CD = 10 cm,

Find the length of arc : $\widehat{ABE}$ = ...

a) 5π b) 10π

c) 14 d) 20π



ans. $r = 10$ **cm**

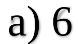
$$L = r \times \theta^{rad} = 10 \times \frac{90\pi}{180} = 5\,\pi \quad \text{(a)}$$

(254) In the opposite figure:

$\overline{BA} \perp \overline{AE}$, $\overline{CD} \perp \overline{DE}$, AE = 9 cm,

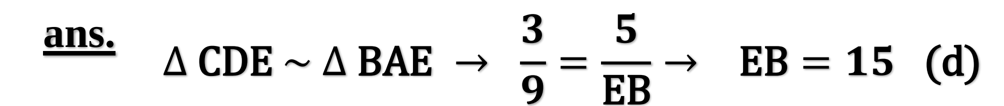
ED = 3 cm, DC = 4 cm

Find the length of : $\overline{EB}$ = ...



a) 6 b) 8

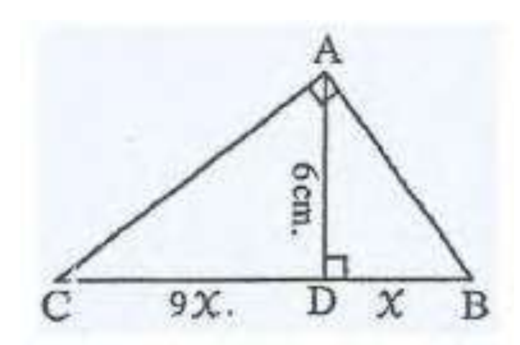
c) 12 d) 14



ans. Δ **CDE** ~ Δ **BAE** $\rightarrow \frac{3}{9} = \frac{5}{EB} \rightarrow$ **EB = 15 (d)**



(255) In the opposite figure:



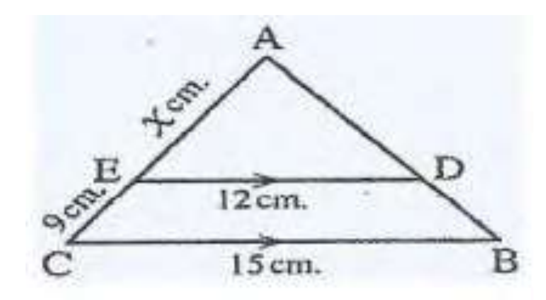
The value of = ...

a) 2 b) 4

c) 6 d) 8

ans. $(AD)^2 = x\,(9x) \rightarrow$ $\mathbf{36 = 9\,x^2} \rightarrow$ $\mathbf{x = 2}$ **(a)**

(256) In the opposite figure:



x = ...

a) 32 b) 40

c) 36 d) 10

ans. $\frac{x}{9+x} = \frac{12}{15} \rightarrow \mathbf{15x = 108 + 12x} \rightarrow$ $\mathbf{x = 36}$ **(c)**

(257) If L, M are the two roots of the equation $x^2 - 7x + 3 = 0$ then

$L^2 + M^2$ = ...

a) 3 b) 7 c) 40 d) 43

ans. $\mathbf{L^2 + M^2 = (L + M)^2 - 2\,L\,M = (7)^2 - 2\,(3) = 43}$ **(d)**

(258) If the two roots of the equation $x^2 + 3x - m = 0$ are real different then m = ...

a) – 9 b) – 2.25 c) – 3 d) – 2

ans. $b^2 - 4ac > 0 \rightarrow 9 + 4m > 0 \rightarrow m > \frac{-9}{4} \rightarrow -2$ **(d)**

(259) If the two roots of the equation $3x^2 - (k + 2)x + k^2 + 2k = 0$ is the multiplication inverse of the other, then $k \in$ ....

a) $\{-3, 1\}$ b) $\{-3, -1\}$ c) $\{3, -1\}$ d) $\{3, 1\}$

ans. $c = a$

$k^2 + 2k = 3$

$k^2 + 2k - 3 = 0 \rightarrow k = -3, k = 1 \rightarrow \{-3, 1\}$ **(a)**

(260) If $f(x) = x^2 - 7x + 12$ then $(x) \leq 0$, in ......

a) $[3, 4]$ b) $\mathbb{R} - [3, 4]$ c) $]3, 4[$ d) $\mathbb{R} -]3, 4[$

ans. $[3, 4]$ **(a)**

(261) If the two roots of the equation $kx^2 - 12x + 9 = 0$ are equal if ....

a) $k < 4$ b) $k = 4$ c) $k > 4$ d) $k = 144$

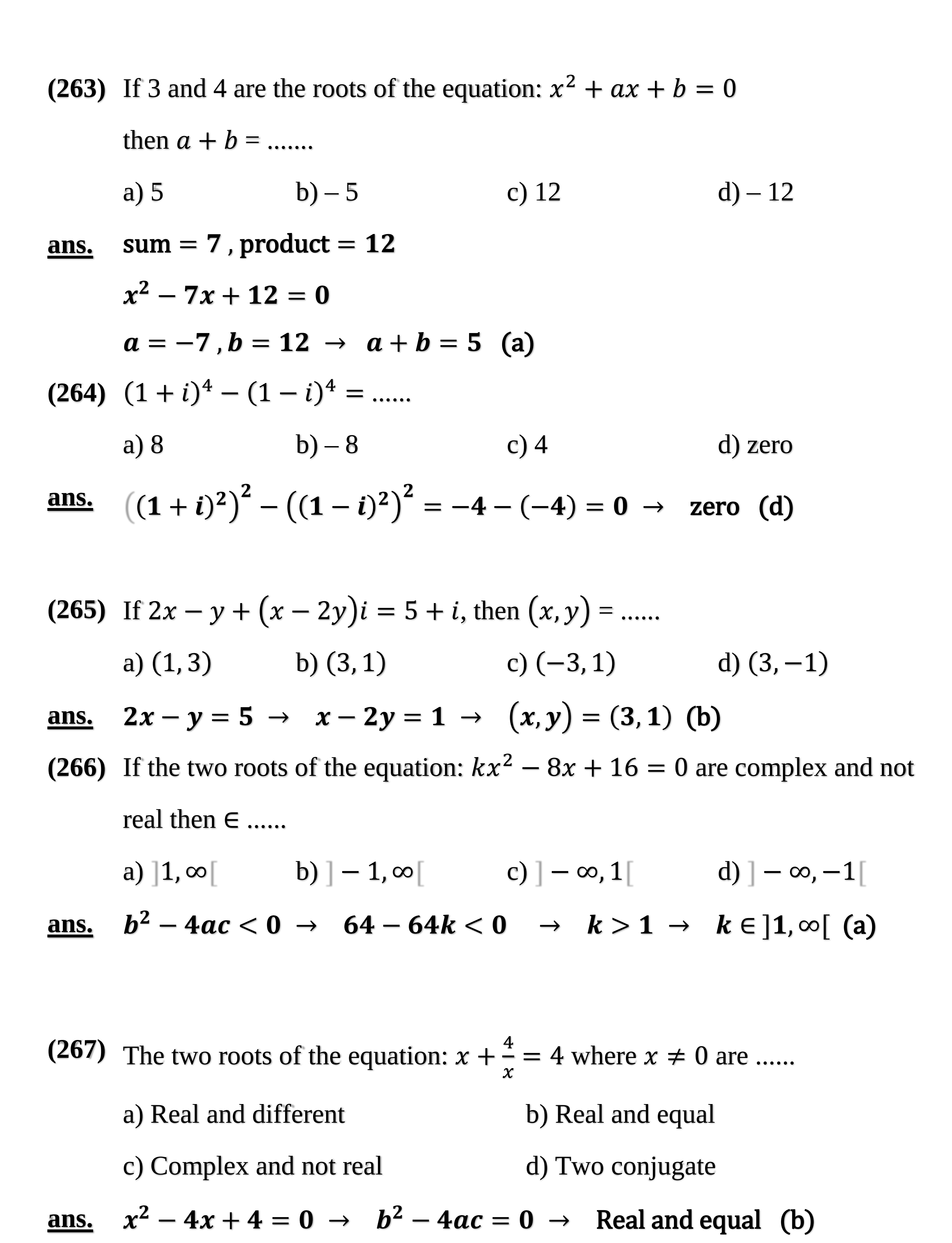
ans. $b^2 - 4ac = 0 \rightarrow 144 - 36k = 0 \rightarrow k = 4$ **(b)**

(262) If $x = -3$ is one of the roots of the equation:

$2x^2 + kx - 3 = 0$, then = ...

a) – 5 b) 5 c) 3 d) – 3

ans. $18 - 3k - 3 = 0 \rightarrow 3k = 15 \rightarrow k = 5$ **(b)**



(263) If 3 and 4 are the roots of the equation: $x^2 + ax + b = 0$

then $a + b =$ ....

a) 5 b) – 5 c) 12 d) – 12

ans. $\mathbf{sum = 7}$ **,** $\mathbf{product = 12}$

$\boldsymbol{x^2 - 7x + 12 = 0}$

$\boldsymbol{a = -7}$ **,** $\boldsymbol{b = 12 \rightarrow a + b = 5}$ **(a)**

(264) $(1+i)^4 - (1-i)^4 =$ ......

a) 8 b) – 8 c) 4 d) zero

ans. $\boldsymbol{((1+i)^2)^2 - ((1-i)^2)^2 = -4 - (-4) = 0 \rightarrow}$ **zero (d)**

(265) If $2x - y + (x - 2y)i = 5 + i$, then $(x, y) =$ ......

a) $(1,3)$ b) $(3,1)$ c) $(-3,1)$ d) $(3,-1)$

ans. $\boldsymbol{2x - y = 5 \rightarrow x - 2y = 1 \rightarrow (x, y) = (3, 1)}$ **(b)**

(266) If the two roots of the equation: $kx^2 - 8x + 16 = 0$ are complex and not real then $\in$ ......

a) $]1, \infty[$ b) $]-1, \infty[$ c) $]-\infty, 1[$ d) $]-\infty, -1[$

ans. $\boldsymbol{b^2 - 4ac < 0 \rightarrow 64 - 64k < 0 \rightarrow k > 1 \rightarrow k \in]1, \infty[}$ **(a)**

(267) The two roots of the equation: $x + \frac{4}{x} = 4$ where $x \neq 0$ are ......

a) Real and different b) Real and equal

c) Complex and not real d) Two conjugate

ans. $\boldsymbol{x^2 - 4x + 4 = 0 \rightarrow b^2 - 4ac = 0 \rightarrow}$ **Real and equal (b)**

(268) If the two roots of the equation $8x^2 - ax + 3 = 0$ are positive and the ration between them is 2 : 3, then a = ...

a) 1   b) – 1   c) – 10   d) 10

ans. **The two roots are 2L and 3L**

$$\text{sum} = 5\,L = \frac{a}{8}\ ,\ \text{product} = 6\,L^2 = \frac{3}{8}$$

$$L^2 = \frac{1}{16} \rightarrow \quad L = \frac{1}{4} \rightarrow \quad \frac{5}{4} = \frac{a}{8} \rightarrow \quad a = 10 \quad \text{(d)}$$

(269) If L and M are the roots of the equation: $x^2 - 8x + 5 = 0$, then the equation whose roots are $\frac{1}{L}$ and $\frac{1}{M}$ is ......

a) $5x^2 + 8x + 1 = 0$ b) $5x^2 - 8x - 1 = 0$

c) $5x^2 - 8x + 1 = 0$ d) $-5x^2 + 8x + 1 = 0$

ans. $L + M = 8\ ,\ L\,M = 5$

$$\frac{1}{L} + \frac{1}{M} = \frac{L+M}{L\,M} = \frac{8}{5}\quad , \frac{1}{L} \times \frac{1}{M} = \frac{1}{L\,M} = \frac{1}{5}$$

$$x^2 - \frac{8}{5}x + \frac{1}{5} = 0 \rightarrow \quad 5x^2 - 8x + 1 = 0 \quad \text{(c)}$$

(270) If the difference of the two roots of the equation:

$x^2 - 9x + (1 - a) = 0$ is 5 then a = ...

a) 13   b) 9   c) – 13   d) – 9

ans. $$\text{difference} = \frac{\sqrt{b^2 - 4ac}}{a} = 5 \rightarrow \quad \frac{\sqrt{81 - 4(1-a)}}{1} = 5$$

$$\sqrt{81 - 4 + 4a} = \sqrt{77 + 4a} = 5$$

$$77 + 4a = 25 \rightarrow \quad a = -13 \quad \text{(c)}$$

(271) If the function $f: \mathrm{R} \rightarrow \mathrm{R}, f(x) = 3x + 6$, then the sign of the function is negative on the interval ......

a) $]2, \infty[$ b) $]-\infty, -2[$ c) $]-\infty, -2]$ d) $[2, \infty[$

ans. $]-\infty, \mathbf{-2}[$ **(b)**

(272) If the function $f(x) = ax^2 + bx + c, a < 0$ and the two roots of the equations $f(x) = 0$ are 2 and – 5, then the function is positive on the interval ....

a) $\{-5, 2\}$ b) $]-5, 2[$ c) $[-5, 2[$ d) $[-5, 2]$

ans. $[\mathbf{-5, 2}[$ **(c)**

(273) The solution set of the inequality: $(x-2)(x-3) < 0$ in R is ......

a) $\{2, 3\}$ b) $]2, 3[$ c) $[2, 3]$ d) $\mathrm{R} - [2, 3]$

ans. $]\mathbf{2, 3}[$ **(b)**

(274) The quadrant in which the angle whose measure $89°59'$ is ....

a) Fourth b) First c) Second d) Third

ans. **First (b)**

(275) If the length of arc of a circle equal $\frac{1}{4}$ of circumference, then the measure of the central angle opposite to this arc equals ....

a) $270°$ b) $180°$ c) $90°$ d) $360°$

ans.

$$\mathbf{L = \frac{1}{4} \times 2\,\pi r \ , \theta = \frac{\frac{1}{2}\pi r}{r} = 90°} \quad \textbf{(c)}$$

(276) If $x \sin\frac{\pi}{6}\cos^2\frac{\pi}{4} = \cos^2 30 \sin\frac{\pi}{2}$ then = ...

a) $\frac{3}{4}$ b) 1 c) 3 d) 4

ans. $\boldsymbol{x \times \frac{1}{2} \times \frac{1}{2} = \frac{3}{4} \times 1 \rightarrow \quad x = 3}$ **(c)**

(277) If $\theta \in \left]\frac{\pi}{2}, \pi\right[$, $\sin\theta = \frac{12}{13}$, then the value of:

$\csc\theta - \tan\theta\cot\theta + \cos^2\theta = ...$

a) $\frac{169}{25}$ b) $\frac{144}{169}$ c) $\frac{25}{169}$ d) $\frac{169}{144}$

ans. $\boldsymbol{\frac{13}{12} - \frac{-12}{5} \times \frac{-5}{12} + \left(\frac{-5}{13}\right)^2 = \frac{\square}{\square}}$

(278) If $\sin(270° - \theta) = -\frac{1}{2}$ where θ is the measure of the smallest positive angle, then = ...

a) 60° b) 30° c) 90° d) 45°

ans. $\boldsymbol{-\cos\theta = \frac{-1}{2} \rightarrow \quad \theta = 60°}$

(279) If $\cos\left(\frac{20+\theta}{2}\right) = \sin\left(\frac{40+\theta}{2}\right)$ where $0° < \theta < 90°$ then ° = ...

a) 30° b) 60° c) 45° d) 15°

ans. $\boldsymbol{\frac{20+\theta}{2} + \frac{40+\theta}{2} = 90 \rightarrow 60 + 2\theta = 180 \rightarrow 2\theta = 120 \rightarrow \theta = 60°}$ **(b)**

(280) If $f(\theta) = 5\sin 3\theta$ then the range of the function is ....

a) $[-3, 3]$ b) $[-5, 5]$ c) $]-3, 3[$ d) $]-5, 5[$

ans. $\boldsymbol{[-5, 5]}$ **(b)**

(281) If $\sin\theta = \frac{3}{5}$ where $0° < \theta < 90°$, then the value of:

$\tan(90 - \theta) + \sec(90 - \theta) = \ldots\ldots.$

a) $\frac{1}{2}$ b) 4 c) 1 d) 2

ans. $\boldsymbol{\cot\theta + \csc\theta = \frac{4}{3} + \frac{5}{3} = 3}$

Complete the following:

(1) The solutions set $x^2 + 9 = 0$ in C ......

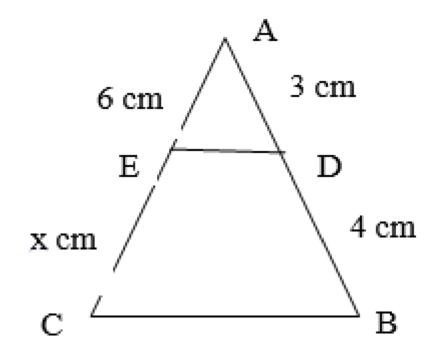
(2) One of the roots of the equation $A\,x^2 + 4x + 7 = 0$ is multiplicative of the other root then $A =$ ......

(3) Any two regular polygons of same number of sides are ....

(4) In the opposite figure:

???

Then = ...



(5) The angle measure $250°$ lies in the .... quadrant

Complete the following from column A to column B

	Columns A	Columns B
(6)	If $A = 1 + 2\sqrt{2}i$, $B = 1 - 2\sqrt{2}i$ then AB = ...	$\{2\}$
(7)	The solutions set $x^2 - 4x + 4 = 0$ in R	9
(8)	If the lengths of two corresponding sides 7 cm, 11 cm then the ratio between their parameters	9
(9)	In Δ ABC ~ Δ XYZ if $\frac{AB}{XY} = 3$ then $\frac{\alpha(\text{of } \Delta \text{ ABC})}{\alpha(\text{of } \Delta \text{ XYZ})} = \cdots$	$410°$
(10)	The angle measure $50°$ in standard position is equivalent to the angle of measure	$\frac{7}{11}$

ans. 1) $\pm 3i$

2) A = 7

3) Similar

4) $x = \frac{4(6)}{3} = 8$ cm

5) third

6) $(1 + 2\sqrt{2}\,i)(1 - 2\sqrt{2}\,i) = 1 + 8 = 9$

7) S.S. of $x^2 - 4x + 4 = 0$ in R is {2}

8) $\frac{7}{11}$

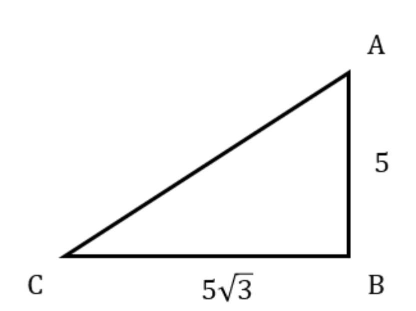
9) $(3)^2 = 9$

10) $410°$

Answer the following questions:

(1) If ABC is a right angled triangle at B, AB = 5 cm, BC = $5\sqrt{3}$ cm, then find: $m(\angle C), m(\angle A)$ and the length of $\overline{AC}$

ans. $m(\angle C) = \tan^{-1}\left(\frac{5}{5\sqrt{3}}\right) = 30°$



$\therefore m(\angle A) = 90 - 30 = 60°$

$AC = \sqrt{\left(5\sqrt{3}\right)^2 + 5^2} = 10$

Other correct methods are always considered.

(2) Prove the validity of the identity: $\sin\theta\cos\theta\ [\tan\theta+\cot\theta]=1$

ans. $\mathbf{\sin\theta\cos\theta\ [\tan\theta+\cot\theta]}$

$$\sin\theta\,\cancel{\cos\theta}\ .\frac{\sin\theta}{\cancel{\cos\theta}}+\cancel{\sin\theta}\cos\theta\ .\frac{\cos\theta}{\cancel{\sin\theta}}$$

$$\sin^2\theta+\cos^2\theta=1$$

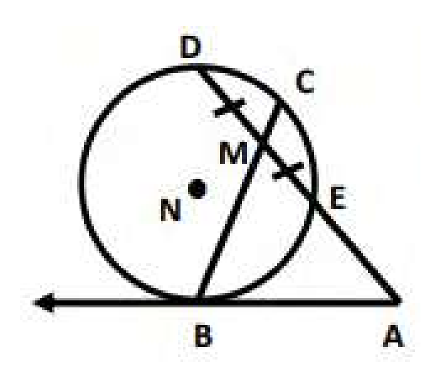
(3) If $a=2i^2-5i^3, b=\frac{2}{i^3}+5\,i^2$, Prove that: $a-b=3(1+i)$

ans. $\boldsymbol{a=2i^2-5i^3\ , b=\frac{2}{i^3}+5i^2}$

$$\boldsymbol{a=-2+5i\ , b=-5+2i}$$

$$\therefore \boldsymbol{a-b=(-2+5i)-(-5+2i)=3(1+i)}$$

(4) In the opposite figure:



$\overrightarrow{AB}$ touches the circle N at B, AE = ED ,

M is the midpoint of $\overline{DE}$, CM = 1cm, MB = 4 cm

Find $P_N(A)$

ans. $\mathbf{ME \,.\, MD = MC \,.\, MB = 1 \times 4}$

$\therefore \mathbf{ME = MD = 2 \rightarrow ED = 4\ cm = AE}$

$\therefore \mathbf{P(A) = AE.AD = 4 \times 8 = 32}$

(5) If L and M are the roots of the equation: $x^2 - 7x + 1 = 0$, form the quadratic equation whose roots are $\sqrt{L}$ and $\sqrt{M}$

ans. $S^2 = \left(\sqrt{L} + \sqrt{M}\right)^2 = L + M + 2\sqrt{LM} = 7 + 2 = 9$ $\boxed{\begin{matrix} L + M = 7 \\ L\,M = 1 \end{matrix}}$

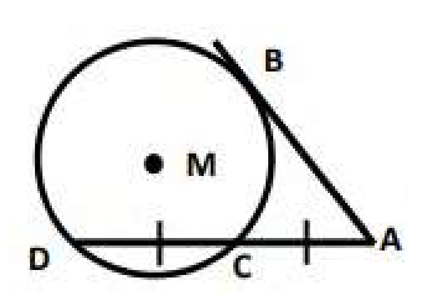
$\therefore S = \sqrt{L} + \sqrt{M} = \sqrt{9} = 3$

$P = \sqrt{LM} = \sqrt{1} = 1$

eq. $x^2 - 3x + 1 = 0$

(6) In the opposite figure:

C is the midpoint of $\overline{DA}$, $\overline{AB}$ touches the circle M at B, $P_M(A) = 200$, find the length of $\overline{AD}$.



ans. $P_M(A) = AC\,(AD) = \frac{AD}{2} \,.\, AD = 200$

$(AD)^2 = 400 \rightarrow AD = 20$

(7) If θ is acute angle in standard position where its terminal side pass through the point (0.6 , B) on unit circle Find to the nearest degree measure of angle $\theta \in [\, 0 , \pi \,]$ which satisfy the relation :

$\tan\theta - 10\sin(90-\theta) - \cot^2(390°)$

ans. $\because (\mathbf{0.6}, \mathrm{B}) \in$ **unit circle**

$$\therefore \cos\theta = \boxed{0.6}\,, \sin\theta = \sqrt{1-0.6^2} = \boxed{0.8}$$

$$\therefore \tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{0.8}{0.6} = \boxed{\frac{4}{3}}$$

$$\sin(90-\theta) = \cos\theta = 0.6$$

$$\cot(390) = \cot 30 = \sqrt{3} \rightarrow \cot^2 390 = 3$$

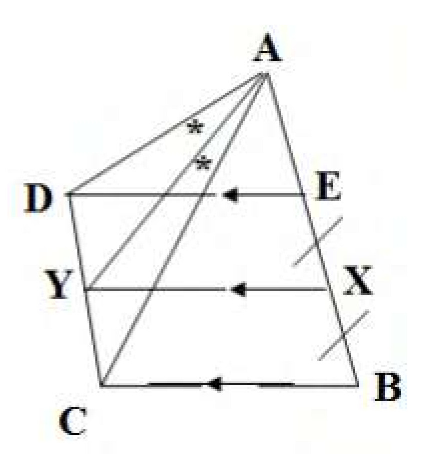
$$\therefore \tan\theta - 10\sin(90-\theta) - \cot^2 390$$

$$\frac{4}{3} - 10(0.6) - 3 = \frac{-35}{3}$$

(8) In the opposite figure : DE // YX // CB

AY bisects ∠ CAD Prove that Δ CAD is an

isosceles triangle



ans. $\because \overrightarrow{AY}$ bisects ∠ CAD

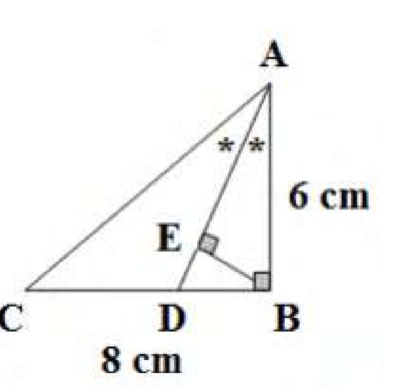
$\therefore \frac{AD}{AC} = \frac{YD}{YC} = \frac{XE}{XB} = 1 \left(\text{As } \overleftrightarrow{DE} \,//\, \overleftrightarrow{YX} \,//\, \overleftrightarrow{CB}\right)$

As $XE = XB \rightarrow AD = AC$

(9) In the opposite figure :

ABC is a right angled triangle at B, AD = $3\sqrt{5}$ cm , BC = 8 cm , AB = 6 cm ,

AD bisects ∠ BAC BE ⊥ AD . Find length of DE



ans. $\overrightarrow{AD}$ bisects ∠ BAC $\rightarrow \frac{AB}{AC} = \frac{DB}{DC} = \frac{6}{10} = \frac{3}{5}$ $\boxed{AC = \sqrt{6^2 + 8^2}}$

$\because$ BC = 8 cm $\therefore$ BD = 3 cm , DC = 5 cm

$(DB)^2 = DE \,.\, DA$ (Euclidean)

$3^2 = DE\left(3\sqrt{5}\right) \rightarrow DE = \frac{3\sqrt{5}}{5}$

$BE = \frac{BA \times BD}{AD} = \frac{6 \times 3}{3\sqrt{5}} = \frac{6\sqrt{5}}{5}$

$\therefore DE = \sqrt{(DB)^2 - (BE)^2} = \frac{3\sqrt{5}}{5}$

(10) If L , M are roots of the equation : $x^2 - 5x + 7 = 0$

Form the equation whose roots L^2 M and M^2 L

<u>ans.</u> **roots: L^2M and M^2L**

$\mathbf{L + M = 5}$ $\mathbf{L\,M = 7}$

$\mathbf{S. = L\,M(L + M) = 7 \times 5 = 35}$

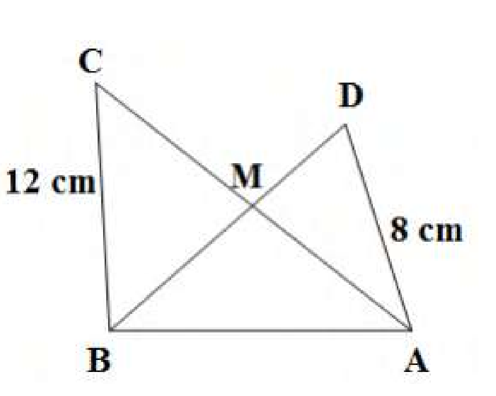
$\mathbf{P. = L^3M^3 = (L\,M)^3 = 5^3 = 125}$

eq. $\boldsymbol{x^2 - 35x + 125 = 0}$

(11) In the opposite figure :

ABCD is cyclic quadrilateral , AD = 8cm ,

CB = 12 cm , Find A(Δ AMD) : A(Δ BMC)



ans. ∵ **ABCD is cyclic quad.**

$\therefore \mathbf{MD \cdot MB = MA \cdot MC} \quad \therefore \frac{\mathbf{MD}}{\mathbf{MA}} = \frac{\mathbf{MC}}{\mathbf{MB}}$

$\because \angle \mathbf{AMD} = \angle \mathbf{CMD}$ **(v.o.a)**

$\therefore \Delta\, \mathbf{AMD} \sim \Delta\, \mathbf{BMC}$ **(S.A.S.)**

$$\therefore \frac{\mathbf{a.(\Delta\, AMD)}}{\mathbf{a.(\Delta\, BMC)}} = \left(\frac{\mathbf{AD}}{\mathbf{BC}}\right)^2 = \left(\frac{\mathbf{8}}{\mathbf{12}}\right)^2 = \mathbf{4 : 9}$$

(12) Determine the sign of the function f where $f(x) = x^2 + 4$

Then find in R the solution set of the inequality $f(x) < 0$

ans. $\boldsymbol{f(x) = 0 \Longrightarrow x^2 + 4 = 0 \xrightarrow{\text{in R}} \emptyset}$

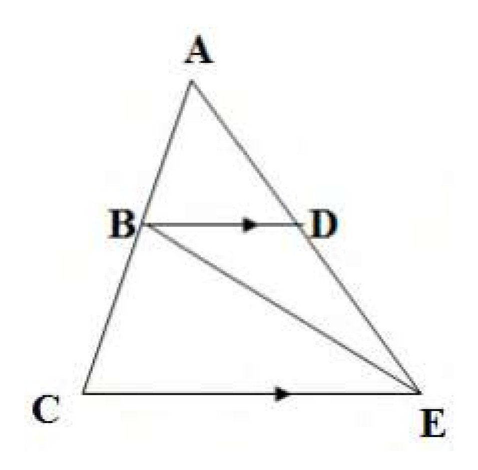
$\therefore$ **S.S. in R of** $\boldsymbol{f(x) < 0}$ **is** $\emptyset$

x

(13) In triangle AEC :

BD // CE, AD : DE = 3 : 4, AE = 9 cm ,

EC = 12 cm . Prove that EB bisects ∠ AEC



ans.

$$\left.\begin{array}{l}\frac{EA}{EC} = \frac{9}{12} = \frac{3}{4} \\ \frac{BA}{BC} = \frac{DA}{DE} = \frac{3}{4}\end{array}\right\} \Rightarrow \frac{EA}{EC} = \frac{BA}{BC}$$

$\therefore \overrightarrow{EB}$ bisects ∠ AEC



كيفية طباعة صفحات معينة من ملف معين



مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

خطوة 1

File Edit View E-Sign Window Help

- Open... Ctrl+O
- Reopen PDFs from last session
- Create
- Insert Pages
- Save Ctrl+S
- Save As... Shift+Ctrl+S
- Save as Other
- Reduce File Size
- Export To
- Protect Using Password
- Request Signatures
- Share File
- Revert
- Close File Ctrl+W
- Properties... Ctrl+D
- Print... Ctrl+P
- 1 0003.pdf
- 2 E:\Image\pdf\0001.pdf
- 3 0001.pdf
- 4 Adobe Scan 2 Sep 2021.pdf
- 5 E:\Image\New folder\2.pdf
- View All Recent Files...
- Exit Application Ctrl+Q

خطوة 2
اختيار اسم الطابعة بتاعتك

خطوة 3
كتابة الصفحات المراد طباعتها
نكتب رقم 4 ثم نكتب الشرطة دي - ثم نكتب 9

Print

Printer: HP LaserJet M207-M212 | Properties | Advanced | Help
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Pages to Print: All | Current | Pages 4 - 9 | More Options

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Comments & Forms: Document and Markups | Summarize Comments

Document: 21.0 x 29.7cm
21.59 x 27.94 cm
Page 1 of 18

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خطوة 4
اختيار نوع الورق

خطوة 5
اختيار A4

Page Setup

Paper — Size: A4 — Source: Automatically Select

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Margins (millimeters): Left 25 | Right 25 | Top 25 | Bottom 25

OK | Cancel

خطوة 6

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